IEC IECEE CB SCHEME

Ref. Certif. No.

DE 3 - 58267

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D'ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product Produit	Information Technology Equipment ePCI/PCI Network Cards
Name and address of the applicant Nom et adresse du demandeur	Sangoma Technologies Inc. 50 McIntosh Drive, Suite 120 Markham ON L3R 9T3, CANADA
Name and address of the manufacturer Nom et adresse du fabricant	Sangoma Technologies Inc., 50 McIntosh Drive, Suite 120, Markham ON L3R 9T3, CANADA
Name and address of the factory Nom et adresse de l'usine	Mara Technologies Inc., 5680 14th Avenue, Markham ON L3S 3K8, CANADA
Rating and principal characteristics Valeurs nominales et caractéristiques principales	Rated Input Voltage: 3.3 V DC, 5 V DC Rated Input Current: 1.7 A, 1.5 A Protection Class: III see attachment for additional ratings and license conditions.
Trade mark (if any) Marque de fabrique (si elle existe)	SANGOMA
Model/type Ref. Ref. de type	A101 Series see attachment for additional model information.
Additional information (if necessary) Information complémentaire (si nécessaire)	CBTL Procedure
A sample of the product was tested and found to be in conformity with Un échantillon de ce produit a été essayé et a été considéré conforme à la	IEC 60950-1:2005
as shown in the Test Report Ref. No. which form part of this certificate comme indiqué dans le Rapport d'essais numéro de référence qui constitue une partie de ce certificat	090-907721-000

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme **National de Certification**

Date, 2009-11-27
CB 09 11 72366 001

Joseph Janeliunas

TÜV SÜD Product Service GmbH · Certification Body · Ridlerstrasse 65 · D-80339 München

TÜV SUD Product Service

CB-1 03.06

Additional Model and Rating information:

Model	Rated Input Voltage	Rated Input Current	Protection Class
A101	3.3 V DC, 5 V DC	1.7 A, 1.5 A	III
A102	3.3 V DC, 5 V DC	1.7 A, 1.5 A	III
A104	3.3 V DC, 5 V DC	1.7 A, 1.5 A	III
A108	3.3 V DC, 5 V DC	1.7 A, 1.5 A	III
A200	3.3 V DC, 5 V DC; 12 V DC	1.7 A, 1.5 A; 0.7 A	III

License Conditions:

1. The unit is evaluated as component of other Information Technology Equipment where the suitability of each combination is to be determined by the accepting NCB.

2. Instructions and equipment markings related to safety shall be in a language, which is acceptable in the country in which the equipment is to be installed.

3. A suitable fire, electrical, mechanical enclosure shall be provided in the end system application.

4. Minimum no.26AWG telecommunication line cord is supplied with the equipment

The EUT, models A101, A102, A104 and A108 are digital data and voice network cards. They are not subjected to TNV evaluation as an approved TELCO-provided DMARK device providing isolation from the TNV to the EUT must be provided in the end use application.

The EUT are rated for a maximum ambient temperature of 50°C.

Date, 2009-11-27
CB 09 11 72366 001

Joseph Janeliunas

Product Service

Product Service

Test Report issued under the responsibility of:

NCB TÜV SÜD Product Service GmbH
Ridlerstr. 65
D – 80339 München
Germany

Product Service

TEST REPORT

IEC 60950-1: 2005 (2nd Edition) and/or EN 60950-1:2006
Information technology equipment – Safety –
Part 1: General requirements

Report Reference No.....:	090-907721-000
Date of issue.....:	2009-11-12
Total number of pages	44 Pages
CB/CCA Testing Laboratory.....:	TÜV PRODUCT SERVICE
Address .....:	5 Cherry Hill Drive Danvers, MA 01923 USA
Applicant's name.....:	Sangoma Technologies Inc.
Address .....:	50 McIntosh Dr., Ste. 120 Markham, ON L3R 9T3 CANADA
Manufacturer's name .....:	Sangoma Technologies Inc.
Address .....:	50 McIntosh Dr., Ste. 120 Markham, ON L3R 9T3 CANADA
Factory's name .....:	Mara Technologies
Address .....:	5680 14th Avenue, Markham, ON, L3S 3K8 CANADA
Test specification:	
Standard .....:	☒ IEC 60950-1:2005 (2nd Edition) and/or ☒ EN 60950-1:2006
Test procedure .....:	CB
Non-standard test method……..:	N/A
Test Report Form No.....:	IECEN60950_1C
Test Report Form(s) Originator .....:	SGS Fimko Ltd
Master TRF .....:	Dated 2007-06

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If this Test Report Form is used by non-CCA members, the CIG logo and the reference to the CCA Procedure shall be removed.
This report is not valid as a CCA Test Report unless signed by an approved CCA Testing Laboratory and appended to a CCA Test Certificate issued by an NCB in accordance with CCA

Test item description .....:	ePCI/PCI Network Cards- Analog Voice Card , Digital Data and Voice Networking Cards
Trade Mark .....:	SANGOMA
Manufacturer .....:	Sangoma Technologies Inc. 50 McIntosh Dr., Ste. 120 Markham, ON L3R 9T3 CANADA
Model/Type reference.....:	A101, A102, A104, A108, A200 Series
Ratings .....:	Models A101, A102, A104, A108: 3.3Vdc, 1.7A; 5Vdc, 1.5A Model A200: 3.3Vdc, 1.7A; 5Vdc, 1.5A; 12Vdc, 0.7A Class III Equipment

Testing procedure and testing location:

☒ **CB/CCA Testing Laboratory**:

Testing location/ address ..... : TÜV PRODUCT SERVICE

5 Cherry Hill Drive, Danvers, MA 01923 USA

☐ **Associated CB Laboratory:**

Testing location/ address ..... :

Tested by (name + signature) ..... : David Dorfner

Approved by (+ signature) ..... : William Stinson

Summary of testing:

A101, A102, A104, A108, A200 Series ePCI/PCI Network Cards- Analog Voice Card , Digital Data and Voice Networking Cards fulfill the requirements of IEC 60950-1:2005 (2nd Edition).

During temperature tests the units were tested inside a desktop computer (model: Hewlett Packard, a6030n) while running looping software.
Model A102 test result is representative of A101 due to similar construction and considered worst case of the two models.
Model A108 test result is representative of A104 due to similar construction and considered worst case of the two models.

Tests performed (name of test and test clause):	**Testing location:**
Equipment has undergone complete testing to comply with IEC 60950-1:2005 (2nd Edition).	TÜV PRODUCT SERVICE 5 Cherry Hill Drive, Danvers MA 01923 USA

Summary of compliance with National Differences:

Refer to Attachment #1 – All countries considered.

Copy of marking plate:

Class III product intended for building-in. Markings not required.

Test item particulars ..... :	
Equipment mobility ..... :	Intended for Building-In
Connection to the mains ..... :	Not Directly Connected to the Mains
Operating condition ..... :	Continuous
Access location ..... :	Intended for Building-In with Service Access Only in End Product.
Over voltage category (OVC) ..... :	OVC I
Mains supply tolerance (%) or absolute mains supply values ..... :	N/A - Intended for Building-In
Tested for IT power systems ..... :	N/A - Intended for Building-In
IT testing, phase-phase voltage (V) ..... :	N/A - Intended for Building-In
Class of equipment ..... :	Class III
Considered current rating (A) ..... :	Models A101, A102, A104, A108: 3.3Vdc, 1.7A; 5Vdc, 1.5A Model A200: 3.3Vdc, 1.7A; 5Vdc, 1.5A; 12Vdc, 0.7A
Pollution degree (PD) ..... :	PD 2
IP protection class ..... :	IPX0
Altitude during operation (m) ..... :	Rated up to 3050m
Altitude of test laboratory (m) ..... :	200m
Mass of equipment (kg) ..... :	0.1 kg
Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing ..... :	
Date of receipt of test item ..... :	2009-10-13
Date(s) of performance of tests ..... :	2009-10-15 to 2009-10-23

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Note: This TRF includes EN Group Differences together with National Differences and Special National Conditions, if any. All Differences are located in the Appendix to the main body of this TRF.

Throughout this report a point is used as the decimal separator.

General product information:

The units are ePCI/ PCI cards intended to be installed in a desktop computer. The unit is a class III device intended to be powered by a separately certified power supply.

The EUT, model A200 is telephony card to be connected to a telecom network and is subjected to TNV-3 evaluation. The A200 has two connectors for daughter cards FXO-5 and FXS to be inserted. Only the FXO-5 is subjected to TNV-3 evaluation. The daughter card FXS is not intended to be subjected to TNV-3 circuits.

Conditions of Acceptability:

1. The unit is evaluated as a component of other Information Technology Equipment where the suitability of each combination is to be determined by the accepting NCB.

2. Instructions and equipment markings related to safety shall be in a language which is acceptable in the country in which the equipment is to be installed.

3. A suitable fire, electrical, mechanical enclosure shall be provided in the end system application.

4. Minimum 26AWG telecommunication line cord is supplied with the equipment.

The EUT, models A101, A102, A104 and A108 are digital data and voice network cards. They are not subjected to TNV evaluation as an approved TELCO-provided DMARK device providing isolation from the TNV to the EUT must be provided in the end use application.

The EUT are rated for a maximum ambient temperature of 50°C.

Model Similarities:

A101 and A102 are identical in physical dimensions. The only difference is model A102 is a dual port while A101 is a single port.

A104 and A108 are identical in physical dimensions. The only difference is model A104 is a 4 digital port while A108 is an eight port configuration.

The series of model name are as follow:

A101 / A101D / A101E / A101DE / RSVLC-1002A (J9487Y) where Y can be any letter from A-Z
A102 / A102D / A102E / A102DE / RSVLC-1002A (J9488Y) where Y can be any letter from A-Z
A104 / A104D / A104E / A104DE / RSVLC-1002B (J9489Y) where Y can be any letter from A-Z
A108 / A108D / A108E / A108DE
A200 / A200D / A200E / A200DE / RSVLC-1002C (J9482Y, J9516Y, J9518Y) where Y can be any letter from A-Z

No suffix : PCI card without echo canceller daughter card
D: PCI card with echo canceller daughter card
E: PCI express card without echo canceller daughter card
DE: PCI express card with echo canceller daughter card
RSVLC-XXXXX (Where X can be any alphanumeric character.): OEM customer equivalent part number

1	GENERAL		—
1.5	Components		—
1.5.1	General		—
	Comply with IEC 60950-1 or relevant component standard	Refer to appended table 1.5.1.	P
1.5.2	Evaluation and testing of components	Components not separately certified are used in accordance with their ratings and they comply with applicable parts of IEC/EN 60950 and the relevant component Standard.	P
1.5.3	Thermal controls	No thermal controls.	N/A
1.5.4	Transformers	No wire wound transformers.	N/A
1.5.5	Interconnecting cables	No interconnecting cables.	N/A
1.5.6	Capacitors bridging insulation	Model A200: Bridging Y2 capacitors from TNV3 to SELV are approved to UL/CSA 60950-1and IEC 60384-14 and are certified by UL and Semko and are considered acceptable to provide Basic insulation.	P
1.5.7	Resistors bridging insulation	No such resistors.	N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N/A
1.5.8	Components in equipment for IT power systems	Class III product intended for building-in. Not directly connected to Mains.	N/A
1.5.9	Surge suppressors	No surge suppressors.	N/A
1.5.9.1	General		N/A
1.5.9.2	Protection of VDRs	No such components.	N/A
1.5.9.3	Bridging of functional insulation by a VDR		N/A
1.5.9.4	Bridging of basic insulation by a VDR		N/A
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A
1.6	Power interface		—
1.6.1	AC power distribution systems	Class III product intended for building-in.	N/A
1.6.2	Input current	Measurements not required.	N/A

1.6.3	Voltage limit of hand-held equipment	Not a hand held device.	N/A
1.6.4	Neutral conductor	Class III product intended for building-in.	N/A

1.7	Marking and instructions		—
1.7.1	Power rating	Class III product intended for building-in. Marked ratings not required.	N/A
	Rated voltage(s) or voltage range(s) (V) .....:		N/A
	Symbol for nature of supply, for d.c. only.....:		N/A
	Rated frequency or rated frequency range (Hz) ....:		N/A
	Rated current (mA or A) .....:		N/A
	Manufacturer's name or trade-mark or identification mark .....:		N/A
	Model identification or type reference .....:		N/A
	Symbol for Class II equipment only .....:		N/A
	Other markings and symbols .....:		N/A
1.7.2	Safety instructions and marking	User manual provided.	P
1.7.2.1	General	User manaul provided.	P
1.7.2.2	Disconnect devices	Class III product intended for building-in. No such component.	N/A
1.7.2.3	Overcurrent protective device	Class III product intended for building-in. Not Type B or Permanently connected equipment	N/A
1.7.2.4	IT power distribution systems	Class III product intended for building-in. Not directly connected to Mains.	N/A
1.7.2.5	Operator access with a tool	To be evaluated in the end product.	N/A
1.2.7.6	Ozone	Does not produce ozone.	N/A
1.7.3	Short duty cycles		N/A
1.7.4	Supply voltage adjustment .....:	Class III product intended for building-in. Not directly connected to Mains.	N/A
	Methods and means of adjustment; reference to installation instructions .....:		N/A
1.7.5	Power outlets on the equipment .....:	No power outlets.	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....:	Fuse identification provided on all models.	P
1.7.7	Wiring terminals	No wiring terminals.	N/A
1.7.7.1	Protective earthing and bonding terminals .....:	No protective earth, Class III unit. TNV compliance not reliant on enclosure grounding.	N/A

1.7.7.2	Terminals for a.c. mains supply conductors		N/A
1.7.7.3	Terminals for d.c. mains supply conductors		N/A
1.7.8	Controls and indicators	Class III product intended for building-in. No safety related controls or indicators.	N/A
1.7.8.1	Identification, location and marking ..... :		N/A
1.7.8.2	Colours ..... :		N/A
1.7.8.3	Symbols according to IEC 60417 ..... :		N/A
1.7.8.4	Markings using figures ..... :		N/A
1.7.9	Isolation of multiple power sources ..... :	Class III product intended for building-in. Not directly connected to Mains.	N/A
1.7.10	Thermostats and other regulating devices ..... :	No such components.	N/A
1.7.11	Durability	Class III product intended for building-in. Marked ratings not required.	N/A
1.7.12	Removable parts	No such components.	N/A
1.7.13	Replaceable batteries ..... :	No such components.	N/A
	Language(s) ..... :	To be provided in the appropriate language of the country of use. Only English language installation has been reviewed.	—
1.7.14	Equipment for restricted access locations ..... :	Not intended for such location.	N/A

2	PROTECTION FROM HAZARDS		—
2.1	Protection from electric shock and energy hazards		—
2.1.1	Protection in operator access areas	Class III product intended for building-in. Not directly connected to Mains.	N/A
2.1.1.1	Access to energized parts	Class III product intended for building-in. To be evaluated in the end application.	N/A
	Test by inspection .....:		N/A
	Test with test finger (Figure 2A) .....:		N/A
	Test with test pin (Figure 2B) .....:		N/A
	Test with test probe (Figure 2C) .....:		N/A
2.1.1.2	Battery compartments	No such compartment.	N/A
2.1.1.3	Access to ELV wiring	No such wiring.	N/A
	Working voltage (Vpeak or Vrms); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring	To be evaluated in the end application.	N/A
2.1.1.5	Energy hazards .....:	No energy hazards present.	N/A
2.1.1.6	Manual controls	The equipment has no manual controls connected to hazardous voltages.	N/A
2.1.1.7	Discharge of capacitors in equipment	No mains supply voltage.	N/A
	Measured voltage (V); time-constant (s).....:		—
2.1.1.8	Energy hazards – d.c. mains supply	No such supply.	N/A
	a) Capacitor connected to the d.c. mains supply ..:		N/A
	b) Internal battery connected to the d.c. mains supply .....:		N/A
2.1.1.9	Audio amplifiers .....:	No such component.	N/A
2.1.2	Protection in service access areas		N/A
2.1.3	Protection in restricted access locations		N/A

2.2	SELV circuits		—
2.2.1	General requirements	All SELV to be provided by separately approved power supply to be provided in the end application.	N/A
2.2.2	Voltages under normal conditions (V) .....:	All voltages are less than 42.4Vp or 60Vdc and are classified as SELV with the exception of the TNV3 circuit in Model A200.	N/A

2.2.3	Voltages under fault conditions (V) ..... :	All SELV to be provided by separately approved power supply to be provided in the end application.	N/A
2.2.4	Connection of SELV circuits to other circuits ..... :	SELV circuits intended to be connected to SELV circuits only with the exception of the TNV3 circuit in Model A200.	P
2.3	TNV circuits		—
2.3.1	Limits	Ringing signals present.	P
	Type of TNV circuits..... :	Model A200: TNV-3.	—
2.3.2	Separation from other circuits and from accessible parts	Basic insulation provided separately certified Y2 capacitors.	P
2.3.2.1	General requirements	Basic insulation provided.	P
2.3.2.2	Protection by basic insulation	Basic insulation provided.	P
2.3.2.3	Protection by earthing	No protective earth, Class III unit. TNV compliance not reliant on enclosure grounding.	N/A
2.3.2.4	Protection by other constructions ..... :		N/A
2.3.3	Separation from hazardous voltages	No hazardous voltage on the board except for TNV3 circuit.	N/A
	Insulation employed ..... :		—
2.3.4	Connection of TNV circuits to other circuits	No primary circuits.	N/A
	Insulation employed ..... :		—
2.3.5	Test for operating voltages generated externally	Not specified according to 2.3.2.3 or 2.3.2.4.	N/A
2.4	Limited current circuits		—
2.4.1	General requirements	No limited current circuits.	N/A
2.4.2	Limit values		N/A
	Frequency (Hz)..... :		—
	Measured current (mA) ..... :		—
	Measured voltage (V)..... :		—
	Measured circuit capacitance (nF or µF) ..... :		—
2.4.3	Connection of limited current circuits to other circuits		N/A

2.5	Limited power sources		—
	a) Inherently limited output	Not a limited power source.	N/A
	b) Impedance limited output		N/A

	c) Regulating network limited output under normal operating and single fault condition		N/A
	d) Overcurrent protective device limited output		N/A
	Max. output voltage (V), max. output current (A), max. apparent power (VA) ..... :		—
	Current rating of overcurrent protective device (A) .:		—
2.6	Provisions for earthing and bonding		—
2.6.1	Protective earthing	No protective earth, Class III unit. TNV compliance not reliant on enclosure grounding.	N/A
2.6.2	Functional earthing		N/A
2.6.3	Protective earthing and protective bonding conductors		N/A
2.6.3.1	General		N/A
2.6.3.2	Size of protective earthing conductors		N/A
	Rated current (A), cross-sectional area (mm^2), AWG ..... :		—
2.6.3.3	Size of protective bonding conductors		N/A
	Rated current (A), cross-sectional area (mm^2), AWG ..... :		—
	Protective current rating (A), cross-sectional area (mm^2), AWG..... :		
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)..... :		N/A
2.6.3.5	Colour of insulation ..... :		N/A
2.6.4	Terminals		N/A
2.6.4.1	General		N/A
2.6.4.2	Protective earthing and bonding terminals		N/A
	Rated current (A), type, nominal thread diameter (mm)..... :		—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N/A
2.6.5	Integrity of protective earthing		N/A
2.6.5.1	Interconnection of equipment		N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N/A
2.6.5.3	Disconnection of protective earth		N/A
2.6.5.4	Parts that can be removed by an operator		N/A
2.6.5.5	Parts removed during servicing		N/A
2.6.5.6	Corrosion resistance		N/A
2.6.5.7	Screws for protective bonding		N/A

2.6.5.8	Reliance on telecommunication network or cable distribution system		N/A
2.7	Overcurrent and earth fault protection in primary circuits		—
2.7.1	Basic requirements	Class III product intended for building-in. Not directly connected to Mains.	N/A
	Instructions when protection relies on building installation		N/A
2.7.2	Faults not simulated in 5.3.7		N/A
2.7.3	Short-circuit backup protection		N/A
2.7.4	Number and location of protective devices .....:		N/A
2.7.5	Protection by several devices		N/A
2.7.6	Warning to service personnel .....:		N/A
2.8	Safety interlocks		—
2.8.1	General principles	No safety interlocks provided or required.	N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches and relays		N/A
2.8.7.1	Contact gaps (mm) .....:		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A
2.9	Electrical insulation		—
2.9.1	Properties of insulating materials	Model A200: Bridging Y2 capacitors from TNV3 to SELV are approved to UL/CSA 60950-1and IEC 60384-14 and are certified by UL and Semko and are considered acceptable to provide Basic insulation.	P
2.9.2	Humidity conditioning	Only insulation relied upon for safety is the Y2 capacitor. Humidity conditioning not relevant.	N/A
	Relative humidity (%), temperature (°C) .....:		—

2.9.3	Grade of insulation	Model A200: Basic (TNV3 to SELV).	P
2.9.4	Separation from hazardous voltages	No hazardous voltage on the board except for TNV3 circuit.	N/A
	Method(s) used .....:		—
2.10	Clearances, creepage distances and distances through insulation		—
2.10.1	General	Minimum Measurement: Measured 1.68mm from pins 7 to 10 on J3 to confirm Basic Insulation provided btween TNV3 and SELV.	P
2.10.1.1	Frequency .....:	Considered.	P
2.10.1.2	Pollution degrees .....:	PD2	P
2.10.1.3	Reduced values for functional insualtion	Considered.	N/A
2.10.1.4	Intervening unconnected conductive parts	Intervening unconnected conductive parts not considered when determining creepage and clearances.	N/A
2.10.1.5	Insulation with varying dimensions	No transformers providing required insualtion that effects safety.	N/A
2.10.1.6	Special separation requirements	Considered.	N/A
2.10.1.7	Insulation in circuits generating starting pulses	No generation of starting pulses.	N/A
2.10.2	Determination of working voltage	Considered and applied.	N/A
2.10.2.1	General		N/A
2.10.2.2	RMS working voltage		N/A
2.10.2.3	Peak working voltage		N/A
2.10.3	Clearances	Minimum Measurement: Measured 1.68mm from pins 7 to 10 on J3 to confirm Basic Insulation provided btween TNV3 and SELV.	P
2.10.3.1	General	Provided as noted above.	P
2.10.3.2	Mains transient voltages	Class III product intended for building-in. Not directly connected to Mains.	N/A
	a) AC mains supply .....:		N/A
	b) Earthed d.c. mains supplies .....:		N/A
	c) Unearthed d.c. mains supplies .....:		N/A
	d) Battery operation .....:		N/A
2.10.3.3	Clearances in primary circuits	Class III product intended for building-in. Not directly connected to Mains.	N/A

2.10.3.4	Clearances in secondary circuits	Class III product intended for building-in. Not directly connected to Mains.	N/A
2.10.3.5	Clearances in circuits having starting pulses	No staring pulses.	N/A
2.10.3.6	Transients from a.c. mains supply .....:	Class III product intended for building-in. Not directly connected to Mains.	N/A
2.10.3.7	Transients from d.c. mains supply .....:	Class III product intended for building-in. Not directly connected to Mains.	N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems .....:	Considered.	N/A
2.10.3.9	Measurement of transient voltage levels	Class III product intended for building-in. Not directly connected to Mains.	N/A
	a) Transients from a mains suplply		N/A
	For an a.c. mains supply .....:		N/A
	For a d.c. mains supply .....:		N/A
	b) Transients from a telecommunication network :		N/A
2.10.4	Creepage distances	Minimum Measurement: Measured 1.68mm from pins 7 to 10 on J3 to confirm Basic Insulation provided btween TNV3 and SELV.	P
2.10.4.1	General	Provided as noted above.	P
2.10.4.2	Material group and caomparative tracking index	Material group IIIb is assumed to be used.	N/A
	CTI tests.....:	Testing not required.	—
2.10.4.3	Minimum creepage distances	Provided as noted above.	P
2.10.5	Solid insulation	No solid insulation relied upon.	N/A
2.10.5.1	General		N/A
2.10.5.2	Distances through insulation		N/A
2.10.5.3	Insulating compound as solid insulation		N/A
2.10.5.4	Semiconductor devices		N/A
2.10.5.5.	Cemented joints		N/A
2.10.5.6	Thin sheet material – General		N/A
2.10.5.7	Separable thin sheet material		N/A
	Number of layers (pcs).....:		—
2.10.5.8	Non-separable thin sheet material		N/A
2.10.5.9	Thin sheet material – standard test procedure		N/A
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure		N/A
	Electric strength test		—

2.10.5.11	Insulation in wound components		N/A
2.10.5.12	Wire in wound components		N/A
	Working voltage .....:		N/A
	a) Basic insulation not under stress .....:		N/A
	b) Basic, supplemetary, reinforced insulation .....:		N/A
	c) Compliance with Annex U .....:		N/A
	Two wires in contact inside wound component; angle between 45° and 90° .....:		N/A
2.10.5.13	Wire with solvent-based enamel in wound components		N/A
	Electric strength test		—
	Routine test		N/A
2.10.5.14	Additional insulation in wound components		N/A
	Working voltage .....:		N/A
	- Basic insulation not under stress .....:		N/A
	- Supplemetary, reinforced insulation .....:		N/A
2.10.6	Construction of printed boards	Separately approved PCB provided.	P
2.10.6.1	Uncoated printed boards		N/A
2.10.6.2	Coated printed boards		N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N/A
2.10.6.4	Insulation between conductors on different layers of a printed board		N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs).....:		N/A
2.10.7	Component external terminations	No coatings relied upon for increased creepage and clearance.	N/A
2.10.8	Tests on coated printed boards and coated components	Separately approved PCB provided. Testing not required.	N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test		N/A
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling	Thermal cycling not relied upon.	N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound	PD2 with no reliance on insulating compounds.	N/A
2.10.11	Tests for semiconductor devices and cemented joints		N/A
2.10.12	Enclosed and sealed parts		N/A

3	WIRING, CONNECTIONS AND SUPPLY		—
3.1	General		—
3.1.1	Current rating and overcurrent protection	Class III product intended for building-in. To be evaluated in end application.	N/A
3.1.2	Protection against mechanical damage		N/A
3.1.3	Securing of internal wiring		N/A
3.1.4	Insulation of conductors		N/A
3.1.5	Beads and ceramic insulators		N/A
3.1.6	Screws for electrical contact pressure		N/A
3.1.7	Insulating materials in electrical connections		N/A
3.1.8	Self-tapping and spaced thread screws		N/A
3.1.9	Termination of conductors		N/A
	10 N pull test		N/A
3.1.10	Sleeving on wiring		N/A
3.2	Connection to a mains supply		—
3.2.1	Means of connection	Class III product intended for building-in. To be evaluated in end application.	N/A
3.2.1.1	Connection to an a.c. mains supply		N/A
3.2.1.2	Connection to a d.c. mains supply		N/A
3.2.2	Multiple supply connections		N/A
3.2.3	Permanently connected equipment		N/A
	Number of conductors, diameter of cable and conduits (mm) .....:		—
3.2.4	Appliance inlets		N/A
3.2.5	Power supply cords		N/A
3.2.5.1	AC power supply cords		N/A
	Type .....:		—
	Rated current (A), cross-sectional area (mm^2), AWG .....:		—
3.2.5.2	DC power supply cords		N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N) .....:		—
	Longitudinal displacement (mm) .....:		—
3.2.7	Protection against mechanical damage		N/A
3.2.8	Cord guards		N/A
	Diameter or minor dimension D (mm); test mass (g) .....:		—
	Radius of curvature of cord (mm) .....:		—

3.2.9	Supply wiring space		N/A
3.3	Wiring terminals for connection of external conductors		—
3.3.1	Wiring terminals	Class III product intended for building-in. To be evaluated in end application.	N/A
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals		N/A
3.3.4	Conductor sizes to be connected		N/A
	Rated current (A), cord/cable type, cross-sectional area (mm^2) ..... :		—
3.3.5	Wiring terminal sizes		N/A
	Rated current (A), type, nominal thread diameter (mm) ..... :		—
3.3.6	Wiring terminal design		N/A
3.3.7	Grouping of wiring terminals		N/A
3.3.8	Stranded wire		N/A
3.4	Disconnection from the mains supply		—
3.4.1	General requirement	Class III product intended for building-in. To be evaluated in end application.	N/A
3.4.2	Disconnect devices		N/A
3.4.3	Permanently connected equipment		N/A
3.4.4	Parts which remain energized		N/A
3.4.5	Switches in flexible cords		N/A
3.4.6	Number of poles - single-phase and d.c. equipment		N/A
3.4.7	Number of poles - three-phase equipment		N/A
3.4.8	Switches as disconnect devices		N/A
3.4.9	Plugs as disconnect devices		N/A
3.4.10	Interconnected equipment		N/A
3.4.11	Multiple power sources		N/A
3.5	Interconnection of equipment		—
3.5.1	General requirements	No such interconnection.	N/A
3.5.2	Types of interconnection circuits ..... :		N/A
3.5.3	ELV circuits as interconnection circuits		N/A
3.5.4	Data ports for additional equipment		N/A

4	PHYSICAL REQUIREMENTS	—

4.1	Stability		—
	Angle of 10°	Class III product intended for building-in.	N/A
	Test force (N) ..... :		N/A
4.2	Mechanical strength		—
4.2.1	General	Class III product intended for building-in. To be evaluated in end application.	N/A
4.2.2	Steady force test, 10 N		N/A
4.2.3	Steady force test, 30 N		N/A
4.2.4	Steady force test, 250 N		N/A
4.2.5	Impact test		N/A
	Fall test		N/A
	Swing test		N/A
4.2.6	Drop test; height (mm) ..... :		N/A
4.2.7	Stress relief test		N/A
4.2.8	Cathode ray tubes	No CRT's.	N/A
	Picture tube separately certified ..... :		N/A
4.2.9	High pressure lamps	No lamps.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N) ..... :	Class III product intended for building-in.	N/A
4.3	Design and construction		—
4.3.1	Edges and corners	All edges and corners are judged to be sufficiently well rounded so as not to constitute a hazard.	P
4.3.2	Handles and manual controls; force (N) ..... :		N/A
4.3.3	Adjustable controls	No adjustable controls.	N/A
4.3.4	Securing of parts	The equipment does not have any supplementary or reinforced insulation.	N/A
4.3.5	Connection by plugs and sockets	The equipment does not have any interchangeable plugs/sockets.	N/A
4.3.6	Direct plug-in equipment	Not direct plug-in equipment.	N/A
	Torque ..... :		—
	Compliance with the relevant mains plug standard ..... :		N/A
4.3.7	Heating elements in earthed equipment	The equipment does not have any heating elements.	N/A
4.3.8	Batteries	The equipment does not have any batteries.	N/A

	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
4.3.9	Oil and grease	Not intended to be exposed to oil, grease or similar.	N/A
4.3.10	Dust, powders, liquids and gases	The equipment does not produce dust or employ powders, liquids or gases.	N/A
4.3.11	Containers for liquids or gases	The equipment does not contain liquids.	N/A
4.3.12	Flammable liquids .....:	The equipment does not use any flammable liquids.	N/A
	Quantity of liquid (l) .....:		N/A
	Flash point (°C) .....:		N/A
4.3.13	Radiation	No radiation of any type.	N/A
4.3.13.1	General		N/A
4.3.13.2	Ionizing radiation	No radiation of any type.	N/A
	Measured radiation (pA/kg) .....:		—
	Measured high-voltage (kV) .....:		—
	Measured focus voltage (kV) .....:		—
	CRT markings .....:		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials	No generavtion of UV.	N/A
	Part, property, retention after test, flammability classification .....:		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....:	No generation of UV.	N/A
4.3.13.5	Laser (including LEDs)	No lasers.	N/A
	Laser class .....:		—
4.3.13.6	Other types .....:	No radiation of any type.	N/A
4.4	Protection against hazardous moving parts		—
4.4.1	General	No moving parts	N/A
4.4.2	Protection in operator access areas .....:		N/A
4.4.3	Protection in restricted access locations .....:		N/A
4.4.4	Protection in service access areas		N/A
4.5	Thermal requirements		—
4.5.1	General	Considered.	P
4.5.2	Temperature tests	Conducted with satisfactory results.	P
	Normal load condition per Annex L .....:		—

4.5.3	Temperature limits for materials	Refer to appended table 4.5.	P
4.5.4	Touch temperature limits	Refer to appended table 4.5.	P
4.5.5	Resistance to abnormal heat .....:	No thermoplastic part supporting hazardous voltages.	N/A
4.6	Openings in enclosures		—
4.6.1	Top and side openings	To be evaluated in the end application.	N/A
	Dimensions (mm) .....:		—
4.6.2	Bottoms of fire enclosures		N/A
	Construction of the bottomm, dimensions (mm) ..:		—
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment		N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm) .....:		—
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A
4.6.5	Adhesives for constructional purposes		N/A
	Conditioning temperature (°C), time (weeks).....:		—
4.7	Resistance to fire		—
4.7.1	Reducing the risk of ignition and spread of flame	Class III product intended for building-in. To be evaluated in the end appliction.	P
	Method 1, selection and application of components wiring and materials	Mounted on 94V-0 PCB.	P
	Method 2, application of all of simulated fault condition tests	Method 1 applied.	N/A
4.7.2	Conditions for a fire enclosure	Class III product intended for building-in. Not directly connected to Mains. Fire enclosure to be provided in the end application.	N/A
4.7.2.1	Parts requiring a fire enclosure		N/A
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		—
4.7.3.1	General	Class III product intended for building-in. Not directly connected to Mains. Fire enclosure to be provided in the end application.	N/A
4.7.3.2	Materials for fire enclosures		N/A

4.7.3.3	Materials for components and other parts outside fire enclosures		N/A
4.7.3.4	Materials for components and other parts inside fire enclosures		N/A
4.7.3.5	Materials for air filter assemblies		N/A
4.7.3.6	Materials used in high-voltage components		N/A

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		—
5.1	Touch current and protective conductor current		—
5.1.1	General	Class III product intended for building-in. Not directly connected to Mains. Single fault testing only relevant in the end application.	N/A
5.1.2	Configuration of equipment under test (EUT)		N/A
5.1.2.1	Single connection to an a.c. mains supply		N/A
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N/A
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N/A
5.1.3	Test circuit		N/A
5.1.4	Application of measuring instrument		N/A
5.1.5	Test procedure		N/A
5.1.6	Test measurements		N/A
	Supply voltage (V) ..... :		—
	Measured touch current (mA) ..... :		—
	Max. allowed touch current (mA) ..... :		—
	Measured protective conductor current (mA) ..... :		—
	Max. allowed protective conductor current (mA) ... :		—
5.1.7	Equipment with touch current exceeding 3,5 mA		N/A
5.1.7.1	General ..... :		N/A
5.1.7.2	Simultaneous multiple connections to the supply		N/A
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks		N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N/A
	Supply voltage (V) ..... :		—
	Measured touch current (mA) ..... :		—
	Max. allowed touch current (mA) ..... :		—
5.1.8.2	Summation of touch currents from telecommunication networks		N/A
	a) EUT with earthed telecommunication ports ..... :		N/A
	b) EUT whose telecommunication ports have no reference to protective earth		N/A
5.2	Electric strength		—

5.2.1	General	Refer to appended table 5.2 – Model A200: Basic insulation required from TNV 3 to SELV and enclosure verified.	P
5.2.2	Test procedure	Considered.	P
5.3	Abnormal operating and fault conditions		—
5.3.1	Protection against overload and abnormal operation	Class III product intended for building-in. Not directly connected to Mains. Single fault testing only relevant in the end application.	N/A
5.3.2	Motors	No motors.	N/A
5.3.3	Transformers	No wire wound transformers provided insulation relied on for safety.	N/A
5.3.4	Functional insulation..... :	Method c) evaluated. No testing conducted as PCB is V-0 and condition of acceptability includes a fire enclosure to be provided in the end system.	N/A
5.3.5	Electromechanical components	No such components.	N/A
5.3.6	Audio amplifiers in ITE ..... :	No audio amplifiers.	N/A
5.3.7	Simulation of faults	To be evaluated in the end application.	N/A
5.3.8	Unattended equipment	To be evaluated in the end application.	N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	To be evaluated in the end application.	N/A
5.3.9.1	During the tests		N/A
5.3.9.2	After the tests		N/A

6	CONNECTION TO TELECOMMUNICATION NETWORKS		—
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		—
6.1.1	Protection from hazardous voltages		—
6.1.2	Separation of the telecommunication network from earth		—
6.1.2.1	Requirements	Model A200: Bridging Y2 capacitors from TNV3 to SELV are approved to UL/CSA 60950-1and IEC 60384-14 and are certified by UL and Semko and are considered acceptable to provide Basic insulation.	P
	Supply voltage (V) .....:	Not powered from AC mains.	—
	Current in the test circuit (mA) .....:	Not powered from AC mains.	—
6.1.2.2	Exclusions .....:		N/A
6.2	Protection of equipment users from overvoltages on telecommunication networks		—
6.2.1	Separation requirements	Basic insulation provided as mentioned above.	P
6.2.2	Electric strength test procedure	1500Vac / 2121Vdc.	P
6.2.2.1	Impulse test	1500Vrms from ring/tip to enclosure and PCI slots.	P
6.2.2.2	Steady-state test	2121Vdc from ring/tip to enclosure and PCI slots.	P
6.2.2.3	Compliance criteria	No breakdown.	P
6.3	Protection of the telecommunication wiring system from overheating		—
	Max. output current (A) .....:	No wiring system.	—
	Current limiting method .....:		—

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		—
7.1	General	Not intended for connection to cable distribution systems.	N/A
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N/A
7.3	Protection of equipment users from overvoltages on the cable distribution system		N/A
7.4	Insulation between primary circuits and cable distribution systems		N/A
7.4.1	General		N/A
7.4.2	Voltage surge test		N/A
7.4.3	Impulse test		N/A

A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		—
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)	Annex A not relied upon.	N/A
A.1.1	Samples ..... :		—
	Wall thickness (mm) ..... :		—
A.1.2	Conditioning of samples; temperature (°C) ..... :		N/A
A.1.3	Mounting of samples ..... :		N/A
A.1.4	Test flame (see IEC 60695-11-3)		N/A
	Flame A, B, C or D ..... :		—
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		N/A
	Sample 1 burning time (s) ..... :		—
	Sample 2 burning time (s) ..... :		—
	Sample 3 burning time (s) ..... :		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		—
A.2.1	Samples, material ..... :		—
	Wall thickness (mm) ..... :		—
A.2.2	Conditioning of samples; temperature (°C) ..... :		N/A
A.2.3	Mounting of samples ..... :		N/A
A.2.4	Test flame (see IEC 60695-11-4)		N/A
	Flame A, B or C ..... :		—
A.2.5	Test procedure		N/A
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s) ..... :		—
	Sample 2 burning time (s) ..... :		—
	Sample 3 burning time (s) ..... :		—
A.2.7	Alternative test acc. to IEC 60695-11-5, cl. 5 and 9		N/A
	Sample 1 burning time (s) ..... :		—
	Sample 2 burning time (s) ..... :		—
	Sample 3 burning time (s) ..... :		—
A.3	Hot flaming oil test (see 4.6.2)		N/A
A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		N/A
B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		—

B.1	General requirements	No motors.	N/A
	Position ..... :		—
	Manufacturer ..... :		—
	Type ..... :		—
	Rated values ..... :		—
B.2	Test conditions		N/A
B.3	Maximum temperatures		N/A
B.4	Running overload test		N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days) ..... :		—
	Electric strength test: test voltage (V) ..... :		—
B.6	Running overload test for d.c. motors in secondary circuits		N/A
B.6.1	General		N/A
B.6.2	Test procedure		N/A
B.6.3	Alternative test procedure		N/A
B.6.4	Electric strength test; test voltage (V) ..... :		N/A
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
B.7.1	General		N/A
B.7.2	Test procedure		N/A
B.7.3	Alternative test procedure		N/A
B.7.4	Electric strength test; test voltage (V) ..... :		N/A
B.8	Test for motors with capacitors		N/A
B.9	Test for three-phase motors		N/A
B.10	Test for series motors		N/A
	Operating voltage (V) ..... :		—
C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		—
	Position ..... :	No wire wound transformers providing insulation relied on for safety.	—
	Manufacturer ..... :		—
	Type ..... :		—
	Rated values ..... :		—
	Method of protection ..... :		—
C.1	Overload test		N/A
C.2	Insulation		N/A
	Protection from displacement of windings ..... :		N/A

D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		—
D.1	Measuring instrument	Class III product intended for building-in. Not directly connected to Mains. Single fault testing only relevant in the end application.	N/A
D.2	Alternative measuring instrument		N/A
E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N/A
F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		N/A
G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		—
G.1	Clearances	Annex G not reied upon.	N/A
G.1.1	General		N/A
G.1.2	Summary of the procedure for determining minimum clearances		N/A
G.2	Determination of mains transient voltage (V)		N/A
G.2.1	AC mains supply .....:		N/A
G.2.2	Earthed d.c. mains supplies .....:		N/A
G.2.3	Unearthed d.c. mains supplies .....:		N/A
G.2.4	Battery operation .....:		N/A
G.3	Determination of telecommunication network transient voltage (V) .....:		N/A
G.4	Determination of required withstand voltage (V)		N/A
G.4.1	Mains transients and internal repetitive peaks .....:		N/A
G.4.2	Transients from telecommunication networks .....:		N/A
G.4.3	Combination of transients		N/A
G.4.4	Transients from cable distribution systems		N/A
G.5	Measurement of transient voltages (V)		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply		N/A
	For a d.c. mains supply		N/A
	b) Transients from a telecommunication network		N/A
G.6	Determination of minimum clearances .....:		N/A
H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N/A
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N/A

	Metal(s) used ..... :	No protective earth, Class III unit. TNV compliance not reliant on enclosure grounding.	—
K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)		—
K.1	Making and breaking capacity	No thermal controls relied upon for safety.	N/A
K.2	Thermostat reliability; operating voltage (V) ..... :		N/A
K.3	Thermostat endurance test; operating voltage (V) ..... :		N/A
K.4	Temperature limiter endurance; operating voltage (V) ..... :		N/A
K.5	Thermal cut-out reliability		N/A
K.6	Stability of operation		N/A
L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)		—
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment	Appropriate loading considered.	P
M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		—
M.1	Introduction	No ringing signals produced.	N/A
M.2	Method A		N/A
M.3	Method B		N/A
M.3.1	Ringing signal		N/A
M.3.1.1	Frequency (Hz) ..... :		—
M.3.1.2	Voltage (V) ..... :		—
M.3.1.3	Cadence; time (s), voltage (V) ..... :		—
M.3.1.4	Single fault current (mA) ..... :		—
M.3.2	Tripping device and monitoring voltage ..... :		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V) ..... :		N/A

N	ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)		—
N.1	ITU-T impulse test generators	Equipment: Keytek EMC Pro Plus.	P
N.2	IEC 60065 impulse test generator		N/A
P	ANNEX P, NORMATIVE REFERENCES		—
Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		—
	a) Preferred climatic categories .....:	NO VDR'S.	N/A
	b) Maximum continuous voltage .....:		N/A
	c) Pulse current .....:		N/A
R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		—
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)	Quality system not relied on for reduced creepage and clearances.	N/A
R.2	Reduced clearances (see 2.10.3)		N/A
S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		—
S.1	Test equipment	Annex S not relied upon.	N/A
S.2	Test procedure		N/A
S.3	Examples of waveforms during impulse testing		N/A
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N/A
		No ingress protection claimed.	—
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		N/A
		Annex U not relied upon.	—
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		—
V.1	Introduction	Class III product intended for building-in. Not directly connected to Mains.	N/A
V.2	TN power distribution systems		N/A
W	ANNEX W, SUMMATION OF TOUCH CURRENTS		—
W.1	Touch current from electronic circuits	Class III product intended for building-in. Not directly connected to Mains.	N/A

W.1.1	Floating circuits		N/A
W.1.2	Earthed circuits		N/A
W.2	Interconnection of several equipments		N/A
W.2.1	Isolation		N/A
W.2.2	Common return, isolated from earth		N/A
W.2.3	Common return, connected to protective earth		N/A
X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		—
X.1	Determination of maximum input current	No wire wound transformers providing insulation relied upon for safety.	N/A
X.2	Overload test procedure		N/A
Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		—
Y.1	Test apparatus ..... :	No UV.	N/A
Y.2	Mounting of test samples ..... :		N/A
Y.3	Carbon-arc light-exposure apparatus ..... :		N/A
Y.4	Xenon-arc light exposure apparatus ..... :		N/A
Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		N/A
AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N/A
BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—

EN 60950-1:2006 – CENELEC COMMON MODIFICATIONS		
Contents	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations	—
General	Delete all the “country” notes in the reference document according to the following list: 1.4.8 Note 2; 1.5.1 Note 2 & 3; 1.5.7.1 Note 1.5.8 Note 2; 1.5.9.4 Note; 1.7.2.1 Note 4, 5 & 6 2.2.3 Note; 2.2.4 Note; 2.3.2 Note 2.3.2.1 Note 2; 2.3.4 Note 2; 2.6.3.3 Note 2 & 3 2.7.1 Note; 2.10.3.2 Note 2; 2.10.5.13 Note 3 3.2.1.1 Note; 3.2.4 Note 3.; 2.5.1 Note 2 4.3.6 Note 1 & 2; 4.7 Note 4; 4.7.2.2 Note 4.7.3.1 Note 2; 5.1.7.1 Note 3 & 4; 5.3.7 Note 1 6 Note 2 & 5; 6.1.2.1 Note 2; 6.1.2.2 Note 6.2.2 Note 6.; 2.2.1 Note 2; 6.2.2.2 Note 7.1 Note 3; 7.2 Note; 7.3 Note 1 & 2 G.2.1 Note 2; Annex H Note 2	—
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for “one package equipment”, and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.	—
1.5.1	Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC	—
1.7.2.1	Add the following NOTE: NOTE Z1 In addition, the instructions shall include, as far as applicable, a warning that excessive sound pressure from earphones and headphones can cause hearing loss	—

2.7.1	Replace the subclause as follows: Basic requirements To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation; c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.	—
2.7.2	This subclause has been declared 'void'.	—
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.	—
3.2.5.1	Replace "60245 IEC 53" by "H05 RR-F"; "60227 IEC 52" by "H03 VV-F or H03 VVH2-F"; "60227 IEC 53" by "H05 VV-F or H05 VVH2-F2". In Table 3B, replace the first four lines by the following: | Up to and including 6 | | 0,75 [a)] | | Over 6 up to and including 10 | (0,75) [b)] | 1,0 | | Over 10 up to and including 16 | (1,0) [c)] | 1,5 | In the conditions applicable to Table 3B delete the words "in some countries" in condition [a)]. In NOTE 1, applicable to Table 3B, delete the second sentence.	—
3.3.4	In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: | Over 10 up to and including 16 | 1,5 to 2,5 | 1,5 to 4 | Delete the fifth line: conductor sizes for 13 to 16 A.	—
4.3.13.6	Add the following NOTE: NOTE Z1 Attention is drawn to 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz. Standards taking into account this Recommendation which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.	—
Annex H	Replace the last paragraph of this annex by: At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete NOTE 2.	—

Biblio-graphy	Additional EN standards.	—

ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS	—

ZB	SPECIAL NATIONAL CONDITIONS: REFER TO ATTACHMENT 1 – NATIONAL DEVIATIONS	—
1.2.4.1	In **Denmark**, certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.	—
1.5.7.1	In **Finland**, **Norway** and **Sweden**, resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.2.	—
1.5.8	In **Norway**, due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).	—
1.5.9.4	In **Finland**, **Norway** and **Sweden**, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.	—
1.7.2.1	In **Finland**, **Norway** and **Sweden**, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland: "Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan" In Norway: “Apparatet må tilkoples jordet stikkontakt” In Sweden: “Apparaten skall anslutas till jordat uttag”	—
1.7.5	In **Denmark**, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.	—
2.2.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	—
2.3.2	In **Finland**, **Norway** and **Sweden** there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.	—
2.3.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	—
2.6.3.3	In the **United Kingdom**, the current rating of the circuit shall be taken as 13 A, not 16 A.	—
2.7.1	In the **United Kingdom**, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.	—
2.10.5.13	In **Finland**, **Norway** and **Sweden**, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.	—

3.2.1.1	In **Switzerland**, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998 Plug Type 25 3L+N+PE 230/400 V, 16 A SEV 5933-2.1998 Plug Type 21 L+N 250 V, 16 A SEV 5934-2.1998 Plug Type 23 L+N+PE 250 V, 16 A	—
3.2.1.1	In **Denmark**, supply cords of single-phase equipment having a rated current not exceeding13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.	—
3.2.1.1	In **Spain**, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994. Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.	—
3.2.1.1	In the **United Kingdom**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations. NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.	—
3.2.1.1	In **Ireland**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.	—
3.2.4	In **Switzerland**, for requirements see 3.2.1.1 of this annex.	—
3.2.5.1	In the **United Kingdom**, a power supply cord with conductor of 1,25 mm2 is allowed for equipment with a rated current over 10 A and up to and including 13 A.	—
3.3.4	In the **United Kingdom**, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm^2 to 1,5 mm^2 nominal cross-sectional area.	—

4.3.6	In the **United Kingdom**, the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.	—
4.3.6	In **Ireland**, DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.	—
5.1.7.1	In **Finland**, **Norway** and **Sweden** TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that ○ is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and ○ has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and ○ is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.	—

6.1.2.1	In **Finland**, **Norway** and **Sweden**, add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV. It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2. A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 132400; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400.	—
6.1.2.2	In **Finland**, **Norway** and **Sweden**, the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.	—
7.2	In **Finland**, **Norway** and **Sweden**, for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	—
7.3	In **Norway** and **Sweden**, there are many buildings where the screen of the coaxial cable is normally not connected to the earth in the building installation.	—
7.3	In **Norway**, for installation conditions see EN 60728-11:2005.	—

ZC	A-DEVIATIONS (informative)	—
1.5.1	**Sweden** (Ordinance 1990:944) Add the following: NOTE In Sweden, switches containing mercury are not permitted.	—

1.5.1	**Switzerland** (Ordinance on environmentally hazardous substances SR 814.081, Annex 1.7, Mercury - Annex 1.7 of SR 814.81 applies for mercury.) Add the following: NOTE In Switzerland, switches containing mercury such as thermostats, relays and level controllers are not allowed.	—
1.7.2.1	**Denmark** (Heavy Current Regulations) Supply cords of CLASS I EQUIPMENT, which is delivered without a plug, must be provided with a visible tag with the following text: Vigtigt! Lederen med grøn/gul isolation må kun tilsluttes en klemme mærket ⏚ eller ⏚ If essential for the safety of the equipment, the tag must in addition be provided with a diagram, which shows the connection of the other conductors, or be provided with the following text: “For tilslutning af de øvrige ledere, se medfølgende installationsvejledning.”	—
1.7.2.1	**Germany** (Gesetz über technische Arbeitsmittel und Verbraucherprodukte (Geräte- und Produktsicherheitsgesetz – GPSG) [Law on technical labour equipment and consumer products], of 6th January 2004, Section 2, Article 4, Clause (4), Item 2). If for the assurance of safety and health certain rules during use, amending or maintenance of a technical labour equipment or readymade consumer product are to be followed, a manual in German language has to be delivered when placing the product on the market. Of this requirement, rules for use even only by SERVICE PERSONS are not exempted.	—
1.7.5	**Denmark** (Heavy Current Regulations) With the exception of CLASS II EQUIPMENT provided with a socket outlet in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-4a, CLASS II EQUIPMENT shall not be fitted with socket-outlets for providing power to other equipment.	—
1.7.13	**Switzerland** (Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries) Annex 2.15 of SR 814.81 applies for batteries.	—
5.1.7.1	**Denmark** (Heavy Current Regulations, Chapter 707, clause 707.4) TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B.	—

1.5.1	TABLE: List of critical components				P
Object/Part No.	Manufacturer/ Trademark	Type/Model	Technical Data	Standard (Edition / Year)	Mark(s) of Conformity[1])
A101 series					
Fuse (Inlet from RJ45) – F1, F2, F3,F4	Littelfuse	461 Series-F1250T	1.25A, 600V, Time Delay	UL 248-14, CSA-C22.2 No. 248.14-00	cURus
T1 Transformer (T1)	Pulse or Certified Equivalent	PE-68678NL	1500Vrms Isolation	UL 60950-1	UR
PCB Material	Various	Various	UL 94 V-0, Min. 105°C	UL 796	UR
A102 series					
Fuse (Inlet from RJ45) – F1, F2, F3,F4, F5, F6, F7, F8	Littelfuse	461 Series-F1250T	1.25A, 600V, Time delay	UL 248-14, CSA-C22.2 No. 248.14- 00	cURus
T1 Transformer (T1,T2)	Pulse or Certified Equivalent	PE-68678NL	1500Vrms Isolation	UL 60950-1	UR
PCB Material	Various	Various	UL 94 V-0, Min. 105 °C	UL 796	UR
A104 series					
Fuse (inlet from RJ45) –F1, F2,F3, F4, F5, F6,F7, F8, F17,F18,F19 F20, F21, F22, F23 F24	Littelfuse	461 series-F1250T	1.25A, 600 V, time delay	UL 248-14, CSA-C22.2 No. 248.14-00	cURus
PCB material	Various	Various	UL 94 V-0, Min. 105 °C	UL 796	UR
A108 series					
Fuse (Inlet from RJ45) –F1, F2,F3, F4, F5, F6,F7, F8, F9, F10, F11, F12, F13, F14, F14, F15, F16, F17,F18, F19 F20, F21, F22, F23, F24, F25, F26, F27, F28, F29, F30, F31, F32	Littelfuse	461 Series-F1250T	1.25A, 600V, Time Delay	UL 248-14, CSA-C22.2 No. 248.14-00	cURus
PCB material	Various	Various	UL 94 V-0, Min. 105 °C	UL 796	UR

1.5.1	TABLE: List of critical components (Continued)				P
Object/Part No.	Manufacturer/ Trademark	Type/Model	Technical Data	Standard (Edition / Year)	Mark(s) of Conformity[1])
A200 series					
TNV to SELV Connector (J3, J21)	Samtec	MB1-130-01-F-S-02-SL	Clearance / Creepage = 1.68mm from Pins 7 to 10 (minus Thickness of Pins 8,9)	—	—
Alternate TNV to SELV Connector (J3, J21)	Samtec	MB1-130-01-F-S-02-SL-POLARIZED (Pin Position 8, 9, 12, 13, 18, 19, 22,23) Selectively Removed	Clearance / Creepage = 2.4mm	—	—
Daughter Card FXO-5	Sangoma	FX0-5	Clearance / Creepage = 2.2mm from Pins Ring/Tip to SELV (Pins 7 to 10)	—	—
Isolation Caps – C24, C26, C38, C40 on the Analog Board- FXO-5	Murata	GA342A1XGF3 30JW31L	250Vac, 1500V Isolation, Y2	UL 60950-1, IEC 60384-14	UR, Semko
PCB Material	Various	Various	UL 94 V-0, Min. 105°C	UL 796	UR
Telecommunication Line Cord	Various	Various	Minimum No. 26AWG	—	—
[1]) An asterisk indicates a mark which assures the agreed level of surveillance.					
Supplementary information: Components not certified to IEC standards have been evaluated during this investigation and found to be suitable for the application.					

1.6.2	TABLE: Electrical data (in normal conditions)					N/A
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
Supplementary information: Class III product intended for building-in. Measurements not required.						

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements					P
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Functional:						
Basic/supplementary:						
TNV3 to SELV (A200*)	125	—	1.5**	1.68	1.5	1.68
Reinforced:						
Supplementary information: • *Measured from connector J3 (pins 7-10 minus the thickness of pins 8,9) • **clearance requirement for rating of 3050m altitude.						

2.10.5	TABLE: Distance through insulation measurements				N/A
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)
Supplementary information: No reliance on Distance Through Insulation.					

4.3.8	TABLE: Batteries								N/A
The tests of 4.3.8 are applicable only when appropriate battery data is not available									
Is it possible to install the battery in a reverse polarity position?									
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. Current	Manuf. Specs.		Meas. Current	Manuf. Specs.	Meas. Current	Manuf. Specs.	Meas. Current	Manuf. Specs.
Max. current during normal condition									
Max. current during fault condition									
Test results:									Verdict
- Chemical leaks									
- Explosion of the battery									
- Emission of flame or expulsion of molten metal									
- Electric strength tests of equipment after completion of tests									
Supplementary information: No batteries.									

4.5	TABLE: Thermal requirements						P
	Supply voltage (V) .....:	3.3Vdc/ 5.0Vdc					—
	Ambient T_{min} (°C) .....:	24					—
	Ambient T_{max} (°C) .....:	24					—
Maximum measured temperature T of part/at::		T (°C)					Allowed T_{max} (°C)
Model A102							
- AFT Base- PCB near U21		36.0					105
- AFT Base- PCB near U17		32.2					105
- AFT Base- PCB near J1		26.6					105
- AFT Base- PCB near C9		39.0					105
- Fuse F5 body		30.1					105
- T1 enclosure		32.6					105
- T2 enclosure		30.8					105
- Component S9		30.5					105
- PCI coverplate		26.0					70
Model A108							
- AFT Base- PCB near U21		41.7					105
- AFT Base- PCB near U17		38.9					105
- AFT Base- PCB near J1		29.6					105
- AFT Base- PCB near C9		42.9					105
- Fuse F28 body		39.2					105
- T1 enclosure		36.7					105
- T2 enclosure		40.8					105
- PCB near U2		44.6					105
- Component S19		34.2					105
- PCI coverplate		26.4					70

4.5	TABLE: Thermal requirements (Continued)						P
	Supply voltage (V) ..... :	3.3Vdc/ 5.0Vdc					—
	Ambient T_{min} (°C) ..... :	24					—
	Ambient T_{max} (°C) ..... :	24					—
Maximum measured temperature T of part/at::		T (°C)					Allowed T_{max} (°C)
Model A200							
- AFT Base- PCB near U21		38.8					105
- AFT Base- PCB near U17		34.3					105
- AFT Base- PCB near C9		35.4					105
- AFT Remora – PCB near R23		28.9					105
- AFT Remora – PCB near D11		30.6					105
- AFT Remora – PCB near U1		31.3					105
- FX0-5 daughter card- S6		32.6					105
- FX0-5 daughter card- PCB near C37		31.3					105
- FXS daughter card- S23		35.2					105
- FXS daughter card- L3		36.4					105
- PCI coverplate		26.5					70

Supplementary information:

The units were tested inside a desktop computer (model: Hewlett Packard, a6030n) while running looping software.

Model A102 test result is representative of A101 due to similar construction and considered worst case of the two models.

Model A108 test result is representative of A104 due to similar construction and considered worst case of the two models.

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class

Supplementary information: Rise of Resistance method not utilized.

4.5.5	TABLE: Ball pressure test of thermoplastic parts		N/A
	Allowed impression diameter (mm) .....:	≤ 2 mm	—

Part	Test temperature (°C)	Impression diameter (mm)

Supplementary information: No thermoplastic part supporting hazardous voltages.

4.7	TABLE: Resistance to fire				N/A
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence

Supplementary information: Class III product intended for building-in. To be evaluated in the end appliction.

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests		P
Test voltage applied between:	Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
Functional:			
Basic/supplementary:			
Model A200: TNV3 to Enclosure	DC	2121*	No
Model A200: TNV3 to SELV	DC	2121*	No
Reinforced:			
Impulse:			
Model A200: TNV3 to Enclosure	AC	1500*	No
Model A200: TNV3 to SELV	AC	1500*	No

Supplementary information: *Test voltage for Australian deviations.

Impulse Test conducted as per Clause 6.2.2- 10/700uS impusle generator @ 1.5kV. Dielectric performed immediately afterwards.

5.3	TABLE: Fault condition tests		N/A
	Ambient temperature (°C) .....:	N/A	—
	Power source for EUT: Manufacturer, model/type, output rating .....:	N/A	—

Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation

Supplementary information: Class III product intended for building-in. Not directly connected to Mains. Single fault testing only relevant in the end application.

Product Service

Attachment No.: 1

National Differences and Group Differences for IEC 60950-1 2nd edition (2005) as published by IEC 2008-06-30
Originated by TÜV Product Service GmbH
Explanation for Abbreviations: Possible Verdicts: **P** = Pass, **F**= Fail, **N** = Not Applicable Remarks: Throughout this report, a point is used as the decimal separator.
Report reference No ….....: 090-907721-000
Date of issue .....: 2009-11-12

Product Service

COUNTRIES			
Country	Group differ.	National differ.	National standard
AR Argentina			
AT Austria OVE	Yes Yes	- -	
AU Australia SAI Global	- -	- -	AS/NZS 60950.1
BE Belgium CEBEC	Yes Yes	- -	
CA Canada CSA ENTELAC ULC	- - - -	Yes Yes - -	CAN/CSA C22.2 No. 60950-1-07
CH Switzerland ELECTROSUISSE	Yes Yes	Yes Yes	
CN China CQC	- -	- -	
CZ Czech Republic EZU	Yes Yes	- -	
DE Germany VDE TÜV RHEINLAND TÜV SÜD PS SLG LGA ETS	Yes Yes Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes Yes Yes	DIN EN 60950-1 (VDE805-1)
DK Denmark UL International Demko A/S	Yes Yes	Yes Yes	DS/EN 60950-1
ES Spain	Yes	Yes	
FI Finland SGS FIMKO	Yes Yes	Yes Yes	EN 60950-1
FR France LCIE	Yes Yes	- -	
GB United Kingdom ASTABEAB BSI	Yes Yes Yes	Yes Yes Yes	EN 60950-1
GR Greece	Yes	-	
HU Hungary MEEI	- -	- -	
IL Israel SII	- -	- -	
IN India STQC	- -	- -	
IT Italy IMQ S.p.a	Yes Yes	- -	

TUV Japan JQA JET UL-Apex	- - - -	- - - -	
KE Kenya	-	-	
KR Korea KTL KETI ERI	- - - -	Yes Yes Yes Yes	K 60950-1
MY Malaysia SIRIM	- -	- -	
NL Netherlands KEMA	Yes Yes	- -	
NO Norway NEMKO	Yes Yes	Yes Yes	EN 60950-1
PL Poland BBJ-SEP	- -	- -	PN-EN 60950-1
SE Sweden SEMKO	Yes Yes	Yes Yes	SS-EN 60950-1, 2nd ed
SG Singapore PSB Corp	- -	- -	
SI Slovenia SIQ	- -	- -	
SK Slovakia EVPU	Yes Yes	- -	
US United States of America UL MET ITS TUV RH NA	- - - - -	Yes Yes Yes Yes Yes	UL 60950-1:2007

Product Service

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict

CA

Canada and the United States of America have adopted a single, bi-national standard, CAN/CSA C22.2 No. 60950-1/UL60950-1, Second Edition, which is based on IEC 60950-1, Second Edition. This bi-national standard should be consulted for further details on the national conditions and differences summarized below.

SPECIAL NATIONAL CONDITIONS

The following is a summary of the key national differences based on national regulatory requirements, such as the Canadian Electrical Code (CEC) Part and the Canadian Building Code, which are referenced in legislation and which form the basis for the rules and practices followed in electrical and building installations.

1.1.1	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.	Considered.	P
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.	Not Pluggable Type A.	N
1.5.5	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the CEC/NEC. For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the CEC are required to have special construction features and identification markings.	Class III equipment intended for building-in. No interconnect cables provided.	N
1.7.1	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings.	Class III equipment intended for building-in. Not connected directly to Mains.	N
	A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235, and if it is part of a range that extends into the Table 2 "Normal Operating Conditions." Likewise, a voltage rating shall not be lower than the specified "Normal Operating Conditions," unless it is part of a range that extends into the "Normal Operating Conditions."		N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.7	Wiring terminals intended to supply Class 2 outputs in accordance with CEC Part 1 or NEC shall be marked with the voltage rating and "Class 2" or equivalent. Marking shall be located adjacent to the terminals and shall be visible during wiring.	Class III equipment intended for building-in. Not connected directly to Mains.	N
2.5	Where a fuse is used to provide Class 2, Limited Power Source, or TNV current limiting, it shall not be operator-accessible unless it is not interchangeable.	No such fuse.	N
2.7.1	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.	Class III equipment intended for building-in. Not connected directly to Mains.	N
	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.		N
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains shall be in accordance with the NEC/CEC.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.1	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.3	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.5	Power supply cords are required to be no longer than 4.5 m in length. Flexible power supply cords are required to be compatible with Tables 11 and 12 of the CEC and Article 400 of the NEC.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.9	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.	Class III equipment intended for building-in. Not connected directly to Mains.	N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
3.3	Wiring terminals and associated spacings for field wiring connections shall comply with CSA C22.2 No. 0.	Equipment intended for building-in.	N
3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm^2).		N
3.3.4	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for Canadian/US wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified (1.7.7).		N
3.4.2	Motor control devices are required for cord-connected equipment with a motor if the equipment is rated more than 12 A, or if the motor has a nominal voltage rating greater than 120 V, or is rated more than 1/3 hp (locked rotor current over 43 A).	Not a motor control device.	N
3.4.8	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position.	No vertically-mounted disconnect switches or circuit breakers.	N
3.4.11	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the computer room remote power-off circuit.	Equipment intended for building-in.	N
4.3.12	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.	No liquids.	N
4.3.13.5	Equipment with lasers is required to meet the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations 21 CFR 1040, as applicable.	No such lasers.	N
4.7	For computer room applications, automated information storage systems with combustible media greater than 0.76 m^3 (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.	Not an automated information storage system.	N
4.7.3.1	For computer room applications, enclosures with combustible material measuring greater than 0.9 m^2 (10 sq ft) or a single dimension greater than 1.8 m (6 ft) are required to have a flame spread rating of 50 or less. For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.		N

Product Service

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
Annex H	Equipment that produces ionizing radiation is required to comply with the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations, 21 CFR 1020, as applicable.	Equipment does not produce ionizing radiation.	N
OTHER DIFFERENCES The following key national differences are based on requirements other than national regulatory requirements.			
1.5.1	Some components and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (Canadian and/or U.S.) component or material standard requirements.	Critical components are NRTL certified where required or have been evaluated as part of this investigation.	P
	These components include: attachment plugs, battery packs (rechargeable type, used with transportable equipment), cathode ray tubes, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), cord sets and power supply cords, direct plug-in equipment, enclosures (outdoor), flexible cords and cables, fuses (branch circuit), fuseholders, ground-fault current interrupters, industrial control equipment, insulating tape, interconnecting cables, lampholders, limit controls, printed wiring, protectors for communications circuits, receptacles, solid state controls, supplementary protectors, switches (including interlock switches), thermal cutoffs, thermostats, (multi-layer) transformer winding wire, transient voltage surge suppressors, tubing, wire connectors, and wire and cables.		P
1.6.1.2	A circuit for connection to the DC Mains Supply is classified as either a SELV Circuit, TNV-2 Circuit or Hazardous Voltage Circuit depending on the maximum operating voltage of the supply. This maximum operating voltage shall include consideration of the battery charging "float voltage" associated with the intended supply system, regardless of the marked power rating of the equipment.	Class III equipment intended for building-in. Not connected directly to Mains. Approved power supply to be provided at the end installation.	N
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vpeak or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.	Model A200: TNV-3. No ringing signals generated.	N

Product Service

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
2.3.2.1	In the event of a single fault between TNV and SELV circuits, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts.	Model A200: Bridging Y2 capacitors from TNV to SELV are approved to UL/CSA 60950-1 and provide Basic insulation. Tested at 1.5kV.	P
2.6.3.4	Protective bonding conductors of non-standard protective bonding constructions (e.g., printed circuit traces) may be subjected to the additional limited short circuit test conditions specified.	Class III equipment intended for building-in. Not connected directly to Mains.	N
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRT's.	N
4.2.11	For equipment intended for mounting on racks and provided with slide/rails allowing the equipment to slide away from the rack for installation, service and maintenance, additional construction, performance and marking requirements are applicable to determine the adequacy of the slide/rails.	Class III equipment intended for building-in. Not connected directly to Mains. Not directly rack mounted.	N
4.3.2	Equipment with handles is required to comply with special loading tests.	No handles. Equipment intended for building-in.	N
5.1.8.3	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.	Class III equipment intended for building-in. Not connected directly to Mains.	N
5.3.7	Internal (e.g., card cage) SELV circuit connectors and printed wiring board connectors that are accessible to the operator and that deliver power are to be overloaded. During abnormal operating testing, if a circuit is interrupted by the opening of a component, the test shall be repeated twice (three tests total) using new components as necessary.	Equipment intended for building-in. No SELV circuit connectors or printed wiring board connectors that are accessible to the operator.	N
6.4	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.	Figure 6C employed.	P
M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.	No ringing signals generated.	N
Annex NAD	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.	Equipment intended for building-in. Equipment not supplied with an earphone.	N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
Annex NAF	Document (paper) shredders likely to be used in a home or home office (Pluggable Equipment Type A plug configuration) are required to comply with additional requirements, including markings/instructions, protection against inadvertent reactivation of a safety interlock, disconnection from the mains supply (via provision of an isolating switch), and protection against operator access (accessibility determined via new accessibility probe & probe/wedge).	Not a paper shredder.	N
CH			
1.5.1	**Switzerland** (Ordinance on environmentally hazardous substance SR 814.81, Annex 1.7, Mercury – Annex 1.7 of SR 814.81 applies for mercury.) Add the following: NOTE In Switzerland, switches containing mercury such as thermostats, relays and level controllers are not allowed.	Equipment contains no mercury.	N
1.7.13	**Switzerland** (Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries) Annex 2.15 of SR 814.81 applies for batteries.	No batteries.	N
3.2.1.1	In **Switzerland**, supply cords of equipment having a RATED CURRENY not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2. 1991 Plug Type 15 3P+N+PE 250/400 V, 10 A SEV 6533-2 1991 Plug Type 11 L+N 250 V, 10 A SEV 6534-2 1991 Plug Type 12 L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2. 1998 Plug Type 25 3L+N+PE 230/240 V, 16 A SEV 5933-2. 1998 Plug Type 21 L+N 250 V, 16 A SEV 5934-2. 1998 Plug Type 23 L+N+PE 250 V, 16 A	Class III equipment intended for building-in. Not connected directly to Mains.	N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
3.2.4	In **Switzerland**, for requirements see 3.2.1.1 of this annex.	Class III equipment intended for building-in. Not connected directly to Mains.	N
DE			
1.7.2.1	**Germany** (Gesetz über technische Arbeitsmittel und Verbraucherprodukte (Geräte- und Produktsicherheitsgesetz – GPSG) [Law on technical labour equipment and consumer products], of 6th January 2004, Section 2, Article 4, Clause (4), Item 2). If for the assurance of safety and health certain rules during use, amending or maintenance of a technical labour equipment or readymade consumer product are to be followed, a manual in German language has to be delivered when placing the product on the market. Of this requirement, rules for use even only by SERVICE PERSONS are not exempted.	Instructions to be provided in the appropriate language of the destination country.	N
DK			
1.2.4.1	In **Denmark**, certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.	Class III equipment intended for building-in. Not connected directly to Mains.	N
1.7.2.1	**Denmark** (Heavy Current Regulations) Supply cords of CLASS I EQUIPMENT, which is delivered without a plug, must be provided with a visible tag with the following text: Vigtigt! Lederen med grøn/gul isolation må kun tilsluttes en klemme mærket eller If essential for the safety of the equipment, the tag must in addition be provided with a diagram, which shows the connection of the other conductors, or be provided with the following text: "For tilslutning af de øvrige ledere, se medfølgende installationsvejledning."	Class III equipment intended for building-in. Not connected directly to Mains.	N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.5	In **Denmark**, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.	Class III equipment intended for building-in. Not connected directly to Mains.	N
1.7.5	**Denmark** (Heavy Current Regulations) With the exception of CLASS II EQUIPMENT provided with a socket outlet in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-4a, CLASS II EQUIPMENT shall not be fitted with socket-outlets for providing power to other equipment.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.1.1	In **Denmark**, supply cords of single-phase equipment having a rated current not exceeding13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.	Class III equipment intended for building-in. Not connected directly to Mains.	N
5.1.7.1	**Denmark** (Heavy Current Regulations, Chapter 707, clause 707.4) TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B.	Class III equipment intended for building-in. Not connected directly to Mains.	N
ES			

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
3.2.1.1	In **Spain**, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994. Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.	Class III equipment intended for building-in. Not connected directly to Mains.	N
FI			
1.5.7.1	Resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.2.	Class III equipment intended for building-in. Not connected directly to Mains.	N
1.5.9.4	The third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.	No VDR's.	N
1.7.2.1	CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: "Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"	Class III equipment intended for building-in. Not connected directly to Mains.	N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
5.1.7.1	TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that ○ is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and ○ has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and ○ is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.	Class III equipment intended for building-in. Not connected directly to Mains.	N

Product Service

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
6.1.2.1	add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV. It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2. A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 132400; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400.	Model A200: Bridging Y2 capacitors from TNV to SELV are approved to UL/CSA 60950-1 and provide Basic insulation. Tested at 1.5kV.	P

Product Service

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
6.1.2.2	The exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.	Class III equipment intended for building-in. Not connected directly to Mains.	N
7.2	For requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	Not intended for connection to Cable Distribution Systems.	N
GB			
2.6.3.3	In the **United Kingdom**, the current rating of the circuit shall be taken as 13 A, not 16 A.	Class III equipment intended for building-in. Not connected directly to Mains.	N
2.7.1	In the **United Kingdom**, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.1.1	In the **United Kingdom**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations. NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.5.1	In the **United Kingdom**, a power supply cord with conductor of 1,25 mm2 is allowed for equipment with a rated current over 10 A and up to and including 13 A.	Class III equipment intended for building-in. Not connected directly to Mains.	N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
3.3.4	In the **United Kingdom**, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm^2 to 1,5 mm^2 nominal cross-sectional area.	Class III equipment intended for building-in. Not connected directly to Mains.	N
4.3.6	In the **United Kingdom**, the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.	Class III equipment intended for building-in. Not connected directly to Mains.	N
IE			
3.2.1.1	In **Ireland**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.	Class III equipment intended for building-in. Not connected directly to Mains.	N
4.3.6	In **Ireland**, DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.	Class III equipment intended for building-in. Not connected directly to Mains.	N
KR			
1.5.101	Addition Plugs for the connection of the apparatus to the supply mains shall comply with the Korean requirement (KSC 8305 and 8305).	Class III equipment intended for building-in. Not connected directly to Mains.	N
7 EMC	Addition The apparatus shall comply with the relevant CISPR standards	EMC not evaluated.	N
NO			

Product Service

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
1.5.7.1	In **Norway**, resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.2.	Class III equipment intended for building-in. Not connected directly to Mains.	N
1.5.8	In **Norway**, due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).	Class III equipment intended for building-in. Not connected directly to Mains.	N
1.5.9.4	In **Norway**, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.	No VDR's.	N
1.7.2.1	In N**orway**, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: "Apparatet må tilkoples jordet stikkontakt"	Class III equipment intended for building-in. Not connected directly to Mains.	N
2.2.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	SELV circuits intended to be connected to SELV circuits only.	P
2.3.2	In **Norway**, there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.	Model A200: Bridging Y2 capacitors from TNV to SELV are approved to UL/CSA 60950-1 and provide Basic insulation. Tested at 1.5kV.	P
2.3.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	Class III equipment intended for building-in. Not connected directly to Mains.	N
2.10.5.13	In **Norway**, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.	No insulating compound relied on as solid insulation.	N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
5.1.7.1	In **Norway**, TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that ○ is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and ○ has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and ○ is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.	Class III equipment intended for building-in. Not connected directly to Mains.	N

Product Service

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
6.1.2.1	In **Norway**, add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV. It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2. A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 132400; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400.	Model A200: Bridging Y2 capacitors from TNV to SELV are approved to UL/CSA 60950-1 and provide Basic insulation. Tested at 1.5kV.	P

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
6.1.2.2	In **Norway**, the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.	Class III equipment intended for building-in. Not connected directly to Mains.	N
7.2	In **Norway**, for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	Not intended for connection to Cable Distribution Systems.	N
7.3	In **Norway**, there are many buildings where the screen of the coaxial cable is normally not connected to the earth in the building installation.	Not intended for connection to Cable Distribution Systems.	N
7.3	In **Norway**, for installation conditions see EN 60728-11:2005.	Not intended for connection to Cable Distribution Systems.	N
SE			
1.5.1	**Sweden** (Ordinance 1990:944) Add the following: NOTE In Sweden, switches containing mercury are not permitted.	Equipment contains no mercury.	N
1.5.7.1	In **Sweden**, resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.2.	Class III equipment intended for building-in. Not connected directly to Mains.	N
1.5.9.4	In **Sweden**, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.	No VDR's.	N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.2.1	In **Sweden**, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: "Apparaten skall anslutas till jordat uttag"	Class III equipment intended for building-in. Not connected directly to Mains.	N
2.3.2	In **Sweden** there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.	Model A200: Bridging Y2 capacitors from TNV to SELV are approved to UL/CSA 60950-1 and provide Basic insulation. Tested at 1.5kV.	P
2.10.5.13	In **Sweden**, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.	No insulating compound relied on as solid insulation.	N
5.1.7.1	In **Sweden** TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that ○ is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and ○ has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and ○ is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.	Class III equipment intended for building-in. Not connected directly to Mains.	N

Product Service

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
6.1.2.1	In **Sweden**, add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV. It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2. A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 132400; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400.	Model A200: Bridging Y2 capacitors from TNV to SELV are approved to UL/CSA 60950-1 and provide Basic insulation. Tested at 1.5kV.	P

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
6.1.2.2	In **Sweden**, the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.	Class III equipment intended for building-in. Not connected directly to Mains.	N
7.2	In **Sweden**, for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	Not intended for connection to Cable Distribution Systems.	N
7.3	In **Sweden**, there are many buildings where the screen of the coaxial cable is normally not connected to the earth in the building installation.	Not intended for connection to Cable Distribution Systems.	N
US			
1.1	Equipment able to be installed in accordance with the National Electrical Code ANSI/NFPA 70	Considered.	P
1.1.1	Equipment able to be installed in accordance with ANSI/NFPA 75 and NEC Art. 645 unless intended for use outside of computer room and provided with such instructions.	Class III equipment intended for building-in. Not connected directly to Mains.	N
1.1.2	Equipment in wire-line communication facilities serving high-voltage electric power stations operating at greater than 1kV are excluded.	Class III equipment intended for building-in. Not connected directly to Mains.	N
1.1.2	Equipment intended for outdoor use	Class III equipment intended for building-in. Not connected directly to Mains.	N
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20 A.	Not pluggable Type A.	N
1.5.1	All IEC standards for components identified in Annex P.1 replaced by the relevant requirements of UL component standards in Annex P.1.	Critical components are NRTL certified where required or have been evaluated as part of this investigation.	P
1.5.1	All IEC standards for components identified in Annex P.2 alternatively satisfied by the relevant requirements of UL component standards	Critical components are NRTL certified where required or have been evaluated as part of this investigation.	P

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
1.5.5	Interconnecting cables acceptable for the application regarding voltage, current, temperature, flammability, mechanical serviceability and the like.	Class III equipment intended for building-in. No interconnect cables provided.	N
1.5.5	For other than limited power and TNV circuits, the type of output circuit identified for output connector.		N
1.5.5	External cable assemblies that exceed 3.05 m in length to be types specified in the NEC		N
1.5.5	Detachable external interconnecting cables 3.05 m or less in length and provided with equipment marked to identify the responsible organization and the designation for the cable		N
1.5.5	Building wiring and cable for use in ducts, plenums and other air handling space subject to special requirements and excluded from scope.		N
1.5.5	Telephone line and extension cords and the like comply with UL 1863		N
1.6.1.2	Equipment intended for connection to a d.c. power (mains) distribution system subjected to special circuit classification requirements (e.g., TNV-2)	Class III equipment intended for building-in. Not connected directly to Mains.	N
1.6.1.2	Earthing of d.c. powered equipment provided		N
1.7	Lamp replacement information indicated on lampholder in operator access area	No lamps.	N
1.7.1	Special marking format for equipment intended for use on a supply system with an earthed neutral and more than one phase conductor	Class III equipment intended for building-in. Not connected directly to Mains.	N
1.7.1	Equipment voltage rating not higher than rating of the plug except under special conditions		N
1.7.6	Fuse replacement marking for operator accessible fuses	No user replaceable fuses.	N
1.7.7	Identification of terminal connection of the equipment earthing conductor	Class III equipment intended for building-in. Not connected directly to Mains.	N
1.7.7	Connectors and field wiring terminals for external Class 2 or Class 3 circuits provided with marking indicating minimum Class of wiring to be used.	Class III equipment intended for building-in. Not connected directly to Mains.	N
1.7.7	Marking located adjacent to terminals and visible during wiring	Class III equipment intended for building-in. Not connected directly to Mains.	N
2.1.1.1	Bare TNV conductive parts protected by a cover are exempt if instructions include directions for disconnection of TNV prior to removal of the cover	Class III equipment intended for building-in.	N

Product Service

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
2.3.1.b	Other telecommunication signaling systems than described in 2.3.1(b) are subject to M.4.	No ringing signals generated.	N
2.3.1.b	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vp or 60 V d.c., the max. current limit through a resistor ≥ 2000 Ohm with loads disconnected is 7.1 mA peak or 30 mA d.c. under normal conditions		N
2.3.1.b	Limits for measurements across 5000 Ohm resistor in the event of a single fault are replaced after 200 ms with the limits of M.3.1.4.		N
2.3.2.1	For a single fault, the limits of 2.2.3 apply to SELV circuits and accessible conductive parts.	Model A200: Bridging Y2 capacitors from TNV to SELV are approved to UL/CSA 60950-1 and provide Basic insulation. Tested at 1.5kV.	P
2.3.2.4	Enamel coating on signal transformer winding wire allowed as an alternative to Basic insulation in specific telecommunication applications if subject to special construction requirements and testing	Exception not relied upon.	N
2.5	Overcurrent protection device required for Class 2 and Class 3 limiting according to the NEC, or for a Limited Power Source, not interchangeable with devices of higher ratings if operator replaceable	No operator replaceable fuses.	N
2.6	Equipment having receptacles for output a.c. power connectors generated from an internal separately derived source have the earthed (grounded) circuit conductor suitably bonded to earth.	No receptacles.	N
2.6.3.3	For Pluggable Equipment Type A, if a) b) or c) are not applicable, the current rating of the circuit is taken as 20 A	Class III equipment intended for building-in. Not connected directly to Mains.	N
2.6.3.4	Capacity of connection between earthing terminal and parts required to be earthed subject to special conditions based on the current rating of the circuit.	Class III equipment intended for building-in. Not connected directly to Mains.	N
2.6.4.1	Field wiring terminals for earthing conductors suitable for wire sizes (gauge) used in US	Class III equipment intended for building-in. No field wiring connections.	N
2.7.1	Data for selection of special external branch circuit overcurrent devices marked on the equipment	Class III equipment intended for building-in. Not connected directly to Mains.	N
2.7.1	Standard supply outlets protected by overcurrent device in accordance with the NEC	No outlets.	N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
2.7.1	Overcurrent protection for individual transformers that distribute power to other units over branch circuit wiring	No transformers that distribute power.	N
2.7.1	Additional requirements for overcurrent protection apply to equipment provided with panelboards	No panelboards.	N
2.7.1	Non-motor-operated equipment requiring special overcurrent protective device marked with device rating.	Class III equipment intended for building-in. Not connected directly to Mains.	N
2.10.5.12	Multi-layer winding wire subject to UL component wire requirements in addition to 2.10.5.12 and Annex U.	No such windings.	N
3.1.1	Permissible combinations of internal wiring/external cable sizes for overcurrent & short circuit protection	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.1.1	All interconnecting cables protected against overcurrent and short circuit.	No interconnecting cables.	N
3.2	Wiring methods permit connection of equipment to primary power supply in accordance with the NEC	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.1	Permitted use for flexible cords and plugs.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.1	Flexible cords provided with attachment plug rated 125% of equipment current rating.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.1	Any Class II equipment provided with 15 or 20 A standard supply outlets, Edison-base lampholders or single pole disconnect device provided with a polarized type attachment plug.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.1.2	Equipment intended for connection to DC mains supply power systems complies with special wiring requirements	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.1.2	Equipment with one pole of the DC mains supply connected to both the equipment mains input terminal and the main protective earthing terminal provided with special instructions and construction provisions for earthing	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.1.2	Equipment with means for connecting supply to earthing electrode conductor has no switches or protective devices between supply connection and earthing electrode connection.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.1.2	Markings and instructions for equipment with provisions to connect earthed conductor of a DC supply circuit to the equipment earthing conductor	Class III equipment intended for building-in. Not connected directly to Mains.	N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
3.2.1.2	Special markings and instructions for equipment with earthed conductor of a DC supply circuit connected to the equipment earthing conductor	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.1.2	Terminals and leads provided for permanent connection of DC powered equipment to supply marked to indicate polarity if reverse polarity may result in a hazard.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.3	Permanently connected equipment has provision for connecting and securing a field wiring system (i.e. conduit, or leads etc.) per the NEC	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.3	Permanently connected equipment may have terminals or leads not smaller than No. 18 AWG (0.82 mm²) and not less than 150 mm in length for connection of field installed wiring.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.3	If supply wires exceed 60 °C, marking indicates use of 75 °C or 90 °C wiring for supply connection as appropriate.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.3	Equipment compatible with suitable trade sizes of conduits and cables.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.5	Length of power supply cord limited to between 1.5 and 4.5 m unless shorter length used when intended for a special installation.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.5	Conductors in power supply cords sized per NEC	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.5	Power supply cords and cord sets incorporate flexible cords suitable for the particular application.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.6	Strain relief provided for non-detachable interconnecting cables not supplied by a limited power source.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.9	Adequate wire bending space and volume of field wiring compartment required to properly make the field connections.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.2.9	Equipment solely for installation in Restricted Access Locations using low voltage d.c. systems may not need provision for connecting and securing a field wiring system when wiring is protected from abuse.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.3	Field wiring terminals provided for interconnection of units for other then LPS or Class 2 circuits also comply with 3.3.	Class III equipment intended for building-in. Not connected directly to Mains.	N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
3.3	Interconnection of units by LPS or Class 2 conductors may have field wiring connectors other than specified in 3.3 if wiring is reliably separated	No interconnection.	N
3.3.1	Terminals for the connection of neutral conductor identified by a distinctive white marking or other equally effective means	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.3.3	Wire binding screw terminal permitted for connection of No. 10 AWG (5.3 mm²) or smaller conductor if provided with upturned lugs, cupped washer or equivalent retention.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.3.4	Terminals accept US wire sizes (gauge)	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.3.4	Terminals accept current-carrying conductors rated 125% of the equipment current rating.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.3.6	Field wiring terminals marked to indicate the material(s) of the conductor for the terminals used	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.3.6	Aluminum conductors not permitted for connection to terminal for equipment earthing conductor	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.3.6	Field wiring connections made through the use of suitable pressure connectors (including set screw type), solder lugs or splices to flexible leads.	Class III equipment intended for building-in. Not connected directly to Mains.	N
3.4.2	Separate motor control device(s) required for cord-connected equipment rated more than 12 A, or with motor rated more than 1/3 hp or more than 120 V.	No motors.	N
3.4.8	Vertically mounted disconnect devices oriented so up position of handle is "on".	No vertically mounted disconnect devices.	N
3.4.11	For computer-room applications, equipment with battery systems capable of supplying 750 VA for 5 minutes provided with battery disconnect means	No batteries.	N
4.2.8.1	Special opening restrictions for enclosures around CRTs with face dimension of 160 mm or more.	No CRT's.	N
4.2.9	Compartment housing high-pressure lamp marked to indicate risk of explosion.	No lamps.	N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
4.2.11	For equipment mounted on racks and provided with slide/rails allowing the equipment to slide away from the rack for installation and maintenance, additional construction, performance and marking requirements are applicable to determine the adequacy of the slide/rails	Class III equipment intended for building-in. Not connected directly to Mains. Not directly rack mounted.	N
4.3.2	Loading test for equipment with handle(s) used to support more than 9 kg	No handles.	N
4.3.6	In addition to the IEC requirements, Direct Plug-in Equipment complies with UL 1310	Class III equipment intended for building-in. Not connected directly to Mains.	N
4.3.12	The max. quantity of flammable liquid stored in equipment per ANSI/NFPA 30 (Table NAE.6)	No liquids.	N
4.3.12	Equipment using replenishable liquids marked to indicate type of liquid to be used.	No liquids.	N
4.3.13.2	Equipment that produces x-radiation and does not comply with 4.3.12 under all conditions of servicing marked to indicate the presence of radiation	Equipment produces no X-radiation.	N
4.3.13.5	Requirements contained in the applicable national codes apply to lasers (21 CFR 1040).	No lasers.	N
4.7	Automated information storage equipment intended to contain more than 0.76 m^3 of combustible media requires provision for automatic sprinklers or a gaseous agent extinguishing system.	Not an automated information storage system.	N
4.7.3.1	Equipment for use in environmental air space other than ducts or plenums provided with metal enclosure or with non-metallic enclosure having adequate fire-resistance and low smoke producing characteristics (according to UL 2043). Equipment for installation in space used for environmental air, described in Sec. 300-22(c) of the NEC, provided with instructions indicating suitability for installation		N
4.7.3.1	Flame spread rating for external surface of combustible material with exposed area greater than 0.93 m^2 or a single dimension greater than 1.8 m; 50 or less for computer room applications or 200 or less for other applications.		N
4.7.3.4	Wire marked "VW-1" or "FT-1" considered equivalent.		N
5.1.8.2	Special earthing provisions and instructions for equipment with high touch current due to telecommunication network connections.	Class III equipment intended for building-in. Not connected directly to Mains.	N

Product Service

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
5.1.8.3	Touch current due to ringing voltage for equipment containing telecommunication network leads.	Class III equipment intended for building-in. Not connected directly to Mains.	N
5.3.7	Overloading of SELV connectors and printed wiring board receptacles accessible to the operator.	Equipment intended for building-in. No SELV circuit connectors or printed wiring board connectors that are accessible to the operator.	N
5.3.7	Tests interrupted by opening of a component repeated two additional times.	Considered.	N
5.3.9.1	Test interrupted by opening of wire or trace subject to certain conditions.	Considered.	N
6	Specialized instructions for telephones that may be connected to a telecommunications network	No telephones that may be connected to a telecommunications network.	N
6	Marking identifying function of telecommunication type connectors not used for connection to a telecommunication network.	Class III equipment intended for building-in.	N
6.3	Equipment remotely powered over telecommunication wiring systems provided with specialized markings adjacent to the connection.	Class III equipment intended for building-in.	N
6.3	Overcurrent protection incorporated into equipment to provide power over telecommunication wiring system not interchangeable with devices of higher ratings if operator replaceable.	No ringing signals generated.	N
6.4	Additional requirements for equipment connected to a telecommunication network using cable subject to overvoltage from power line failures	Considered.	N
6.4	Where 26 AWG line cord required by Fig. 6C, either the cord is provided with the equipment or described in the safety instructions.	Telecommunication cord provided with equipment.	P
7	Equipment associated with the cable distribution system may need to be subjected to applicable parts of Chapter 8 of the NEC.	Not intended for connection to Cable Distribution Systems.	N
H	Ionizing radiation measurements made under single fault conditions according to 21 CFR 1020	Equipment does not produce ionizing radiation.	N
M.2	Continuous ringing signals evaluated to Method A subjected to special accessibility considerations.	No ringing signals generated.	N
M.4	Special requirements for message waiting and similar telecommunications signals.	No ringing signals generated.	N
NAC	Equipment for use with a generic secondary protector marked with suitable instructions.	Class III equipment intended for building-in. Not connected directly to Mains.	N
NAC	Equipment marked with suitable instructions if for use with a specific primary or secondary protector	Class III equipment intended for building-in. Not connected directly to Mains.	N

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict
NAD	Acoustic pressure from an ear piece for short and long duration disturbances	No earpieces provided.	N
NAD	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements	No earpieces provided.	N
NAF	Household/Home Office Document Shredders	Not a shredder.	N
NAF.1.7	Markings and instructions alert the user to key safety considerations related to use of shredders, including not intended to be used by children, avoid touching document feed opening, avoid clothes and hair entanglement, and avoid aerosol products.		N
NAF.2.8.3	Safety interlock cannot be inadvertently activated by the articulated accessibility probe		N
NAF.3.4	Provided with an isolating switch complying with 3.4.2, including 3 mm contact gap, with appropriate markings associated with the switch.		N
NAF.4.4	Hazardous moving parts are not accessible, as determined using the articulated accessibility probe and the accessibility probe/wedge		N
EN 60950-1:2006 – COMMON MODIFICATIONS			
Contents	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations		—
General	Delete all the “country” notes in the reference document according to the following list: 1.4.8 Note 2; 1.5.1 Note 2 & 3; 1.5.7.1 Note 1.5.8 Note 2; 1.5.9.4 Note; 1.7.2.1 Note 4, 5 & 6 2.2.3 Note; 2.2.4 Note; 2.3.2 Note 2.3.2.1 Note 2; 2.3.4 Note 2; 2.6.3.3 Note 2 & 3 2.7.1 Note; 2.10.3.2 Note 2; 2.10.5.13 Note 3 3.2.1.1 Note; 3.2.4 Note 3.; 2.5.1 Note 2 4.3.6 Note 1 & 2; 4.7 Note 4; 4.7.2.2 Note 4.7.3.1 Note 2; 5.1.7.1 Note 3 & 4; 5.3.7 Note 1 6 Note 2 & 5; 6.1.2.1 Note 2; 6.1.2.2 Note 6.2.2 Note 6.; 2.2.1 Note 2; 6.2.2.2 Note 7.1 Note 3; 7.2 Note; 7.3 Note 1 & 2 G.2.1 Note 2; Annex H Note 2		—

Product Service

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict

1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for "one package equipment", and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.	N
1.5.1	Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC	P
1.7.2.1	Add the following NOTE: NOTE Z1 In addition, the instructions shall include, as far as applicable, a warning that excessive sound pressure from earphones and headphones can cause hearing loss	N
2.7.1	Replace the subclause as follows: Basic requirements To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation; c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.	N
2.7.2	This subclause has been declared 'void'.	—
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.	N

Product Service

NATIONAL DIFFERENCES – GROUP DIFFERENCES			
Clause	Requirement – Test	Result – Remark	Verdict

3.2.5.1	Replace “60245 IEC 53” by “H05 RR-F”; “60227 IEC 52” by “H03 VV-F or H03 VVH2-F”; “60227 IEC 53” by “H05 VV-F or H05 VVH2-F2”. In Table 3B, replace the first four lines by the following: | Up to and including 6 | | 0,75 [a)] | | Over 6 up to and including 10 | (0,75) [b)] 1,0 | | Over 10 up to and including 16 | (1,0) [c)] 1,5 | In the conditions applicable to Table 3B delete the words “in some countries” in condition [a)]. In NOTE 1, applicable to Table 3B, delete the second sentence.	N
3.3.4	In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: | Over 10 up to and including 16 | 1,5 to 2,5 | 1,5 to 4 | Delete the fifth line: conductor sizes for 13 to 16 A.	N
4.3.13.6	Add the following NOTE: NOTE Z1 Attention is drawn to 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz. Standards taking into account this Recommendation which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.	N
Annex H	Replace the last paragraph of this annex by: At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete NOTE 2.	P
Biblio-graphy	Additional EN standards.	—
ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS	—
ZB	SPECIAL NATIONAL CONDITIONS (SEE INDIVIDUAL COUNTRIES)	P
ZC	A-DEVIATIONS (informative) (SEE INDIVIDUAL COUNTRIES)	—

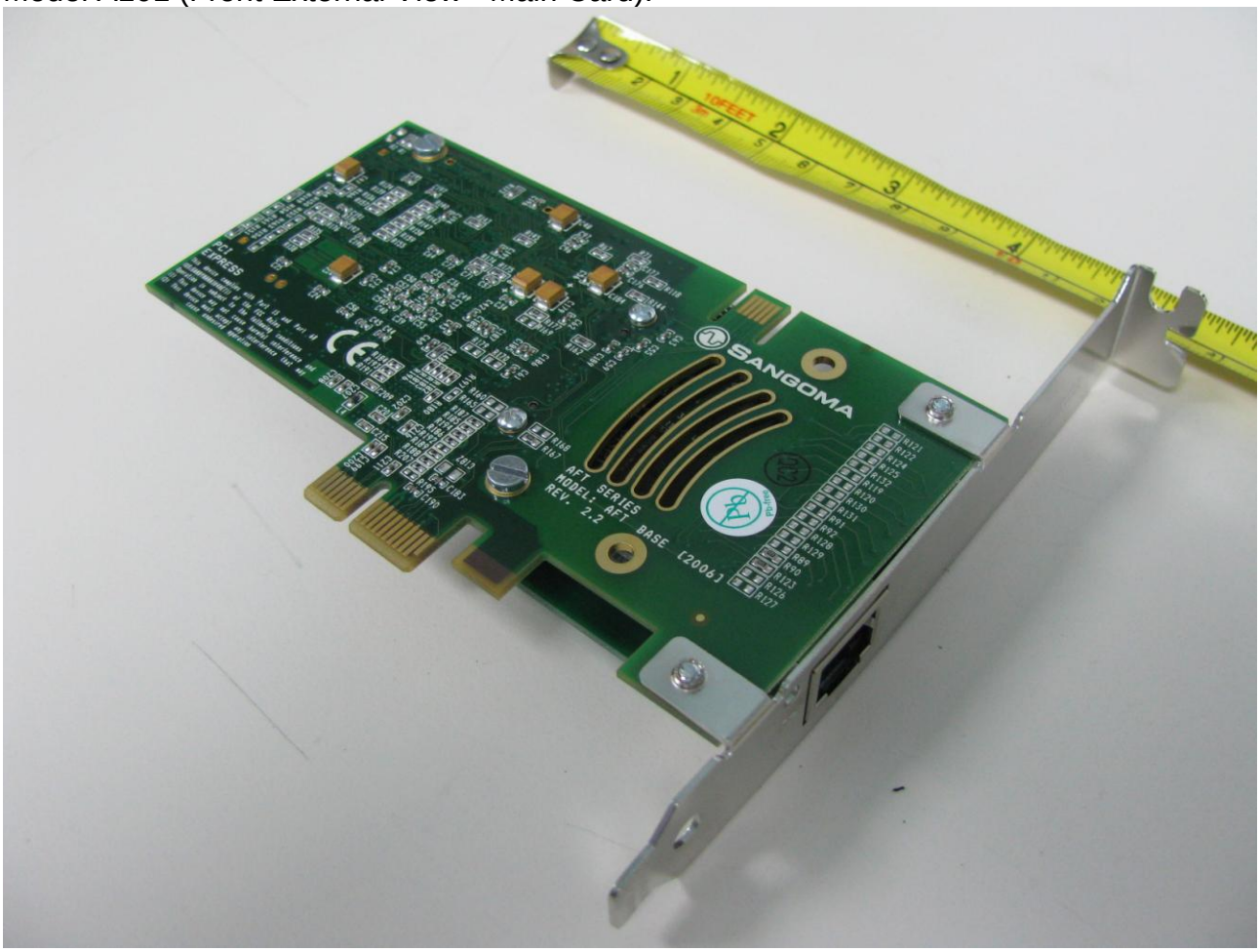
Attachment No. 2

PHOTOGRAPHS

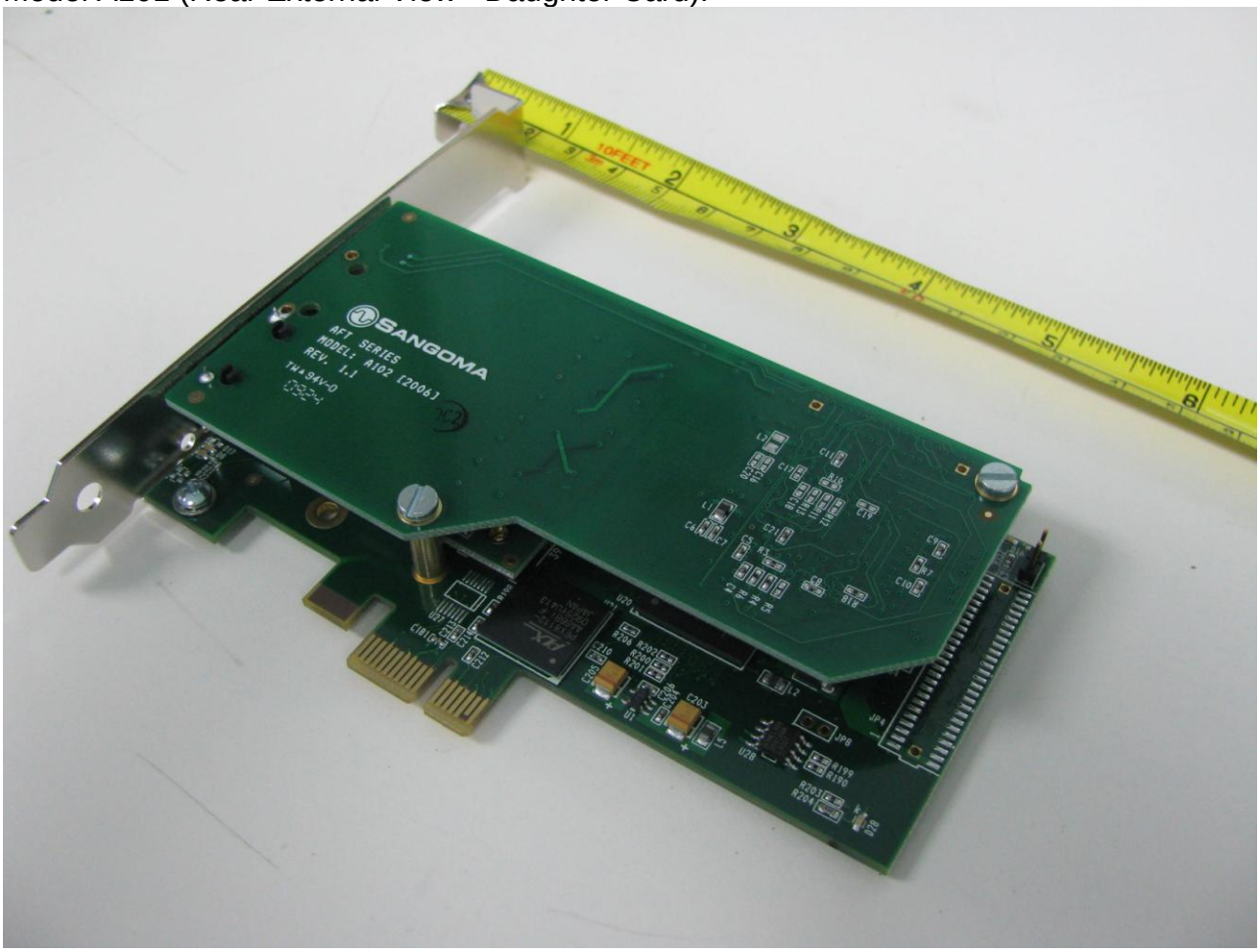
Attachment Contains

Total:	**16 Pages**
Cover page:	**1 Page**
Photos:	**15 Pages**

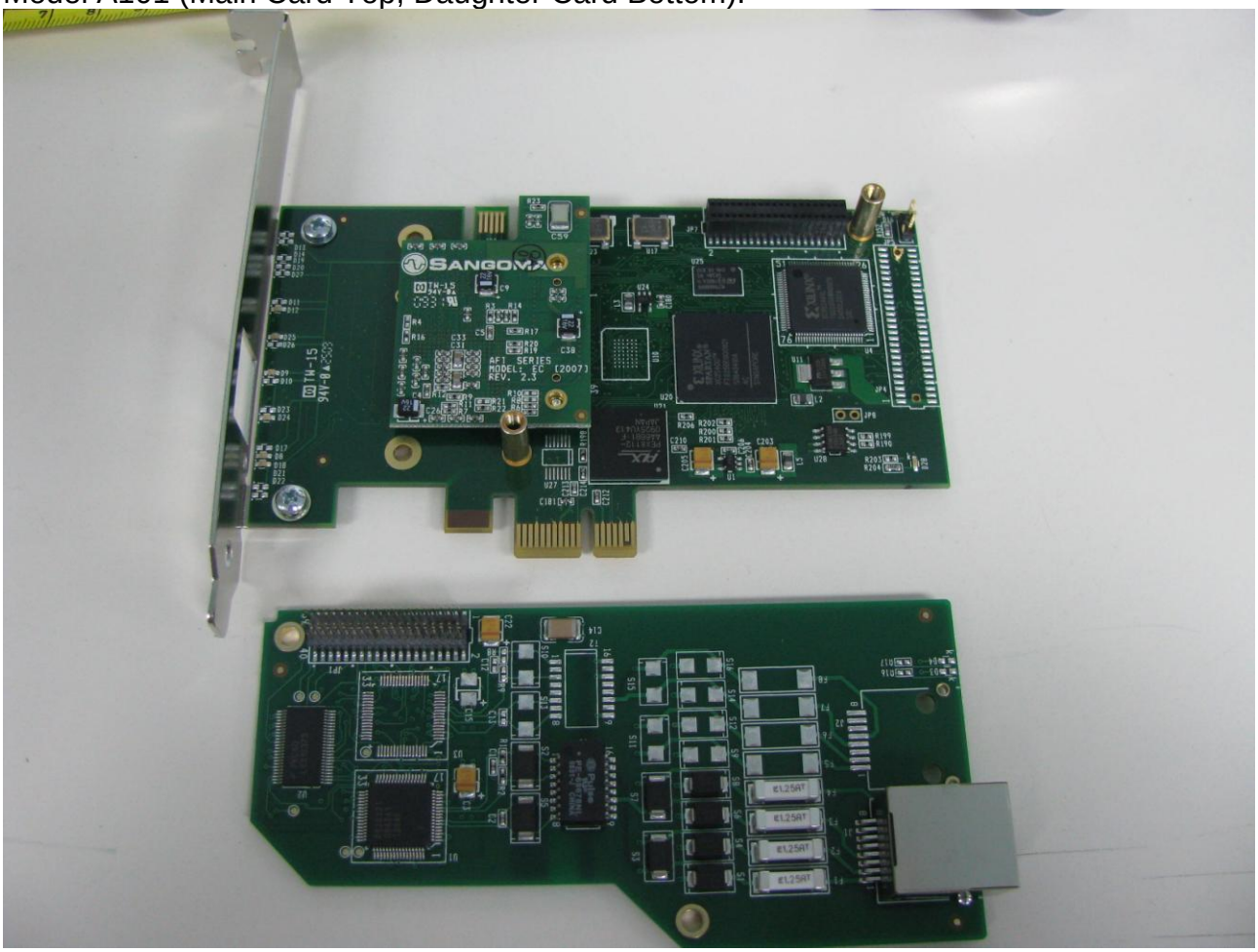
Model A101 (Front External View - Main Card):



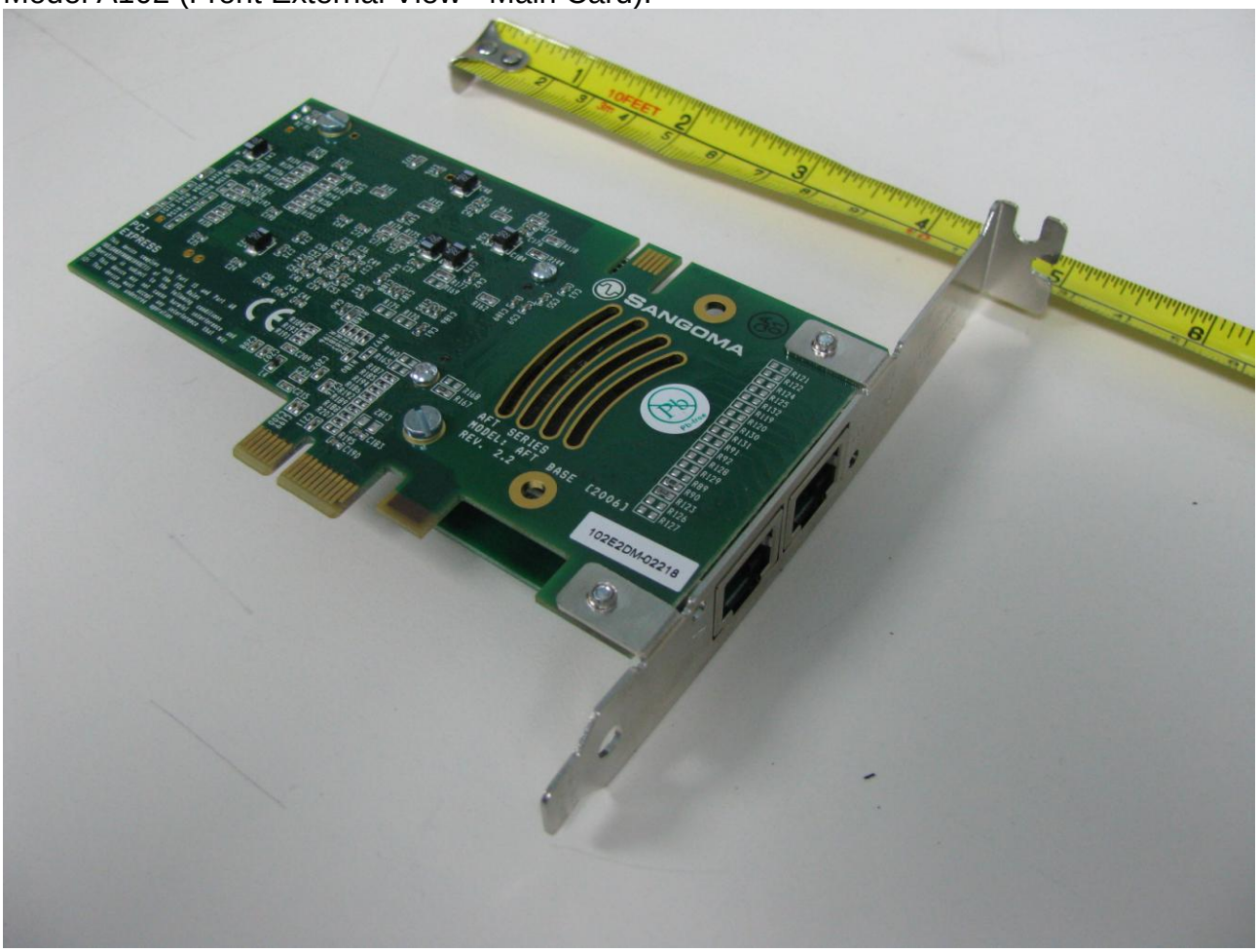
Model A101 (Rear External View - Daughter Card):



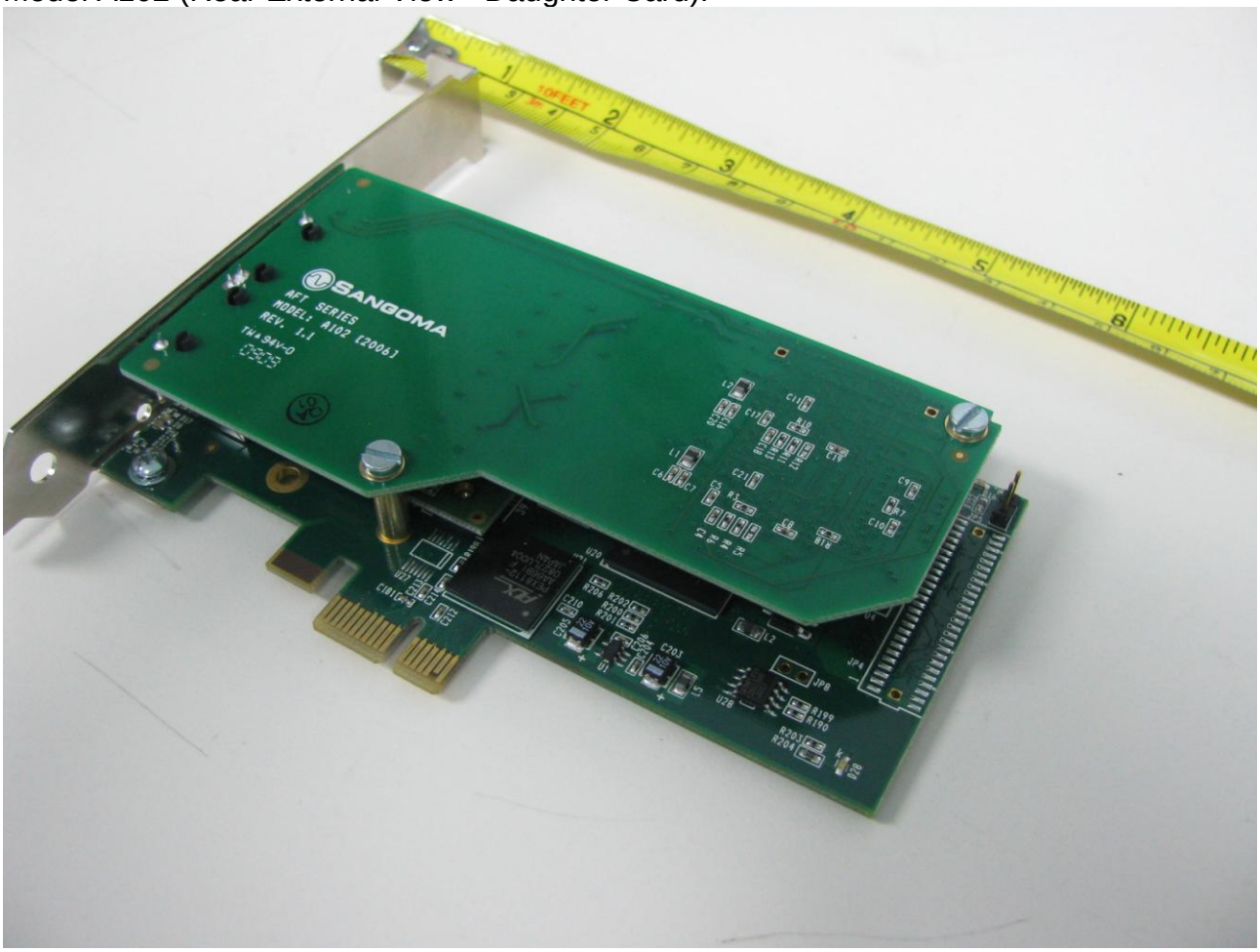
Model A101 (Main Card Top, Daughter Card Bottom):



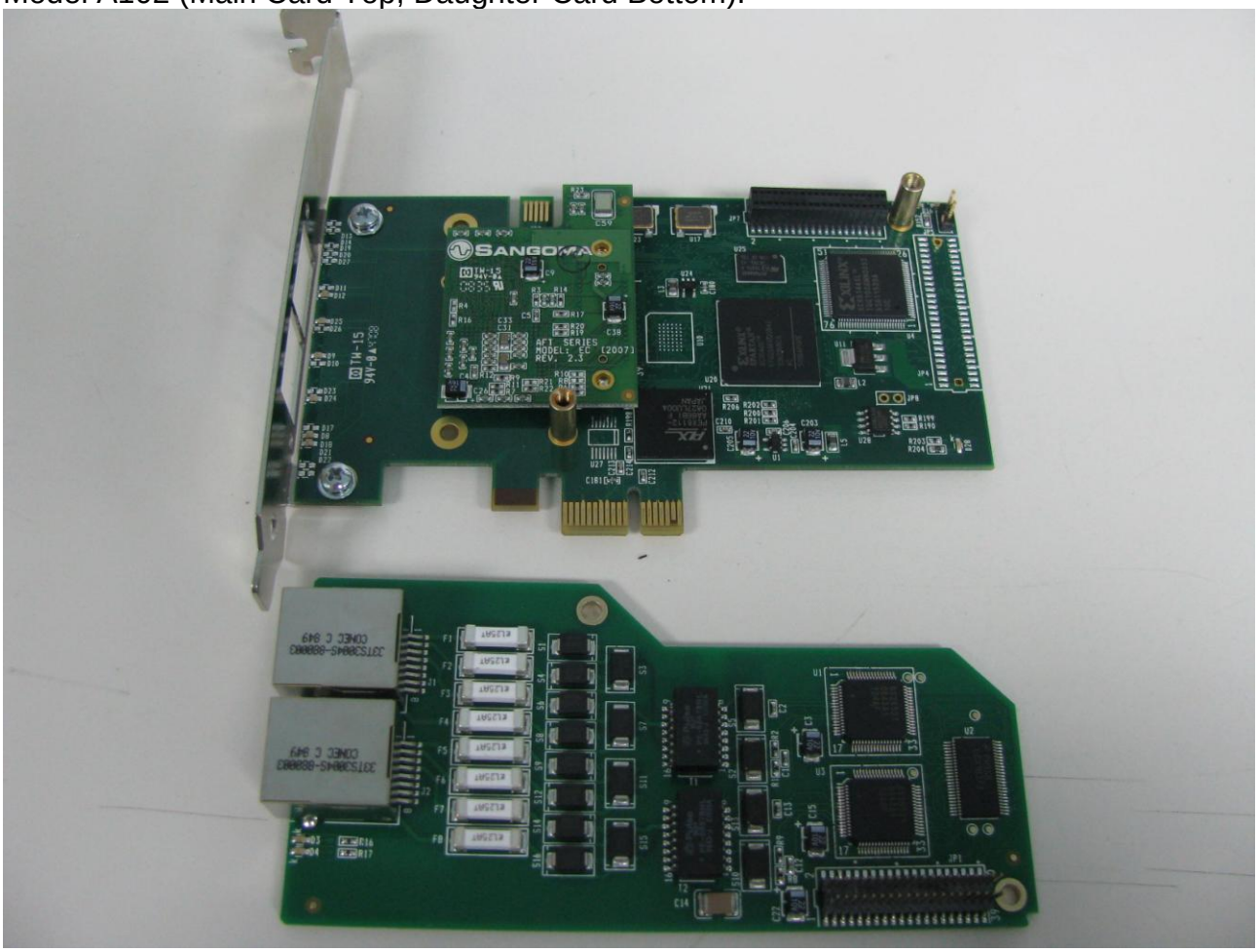
Model A102 (Front External View - Main Card):



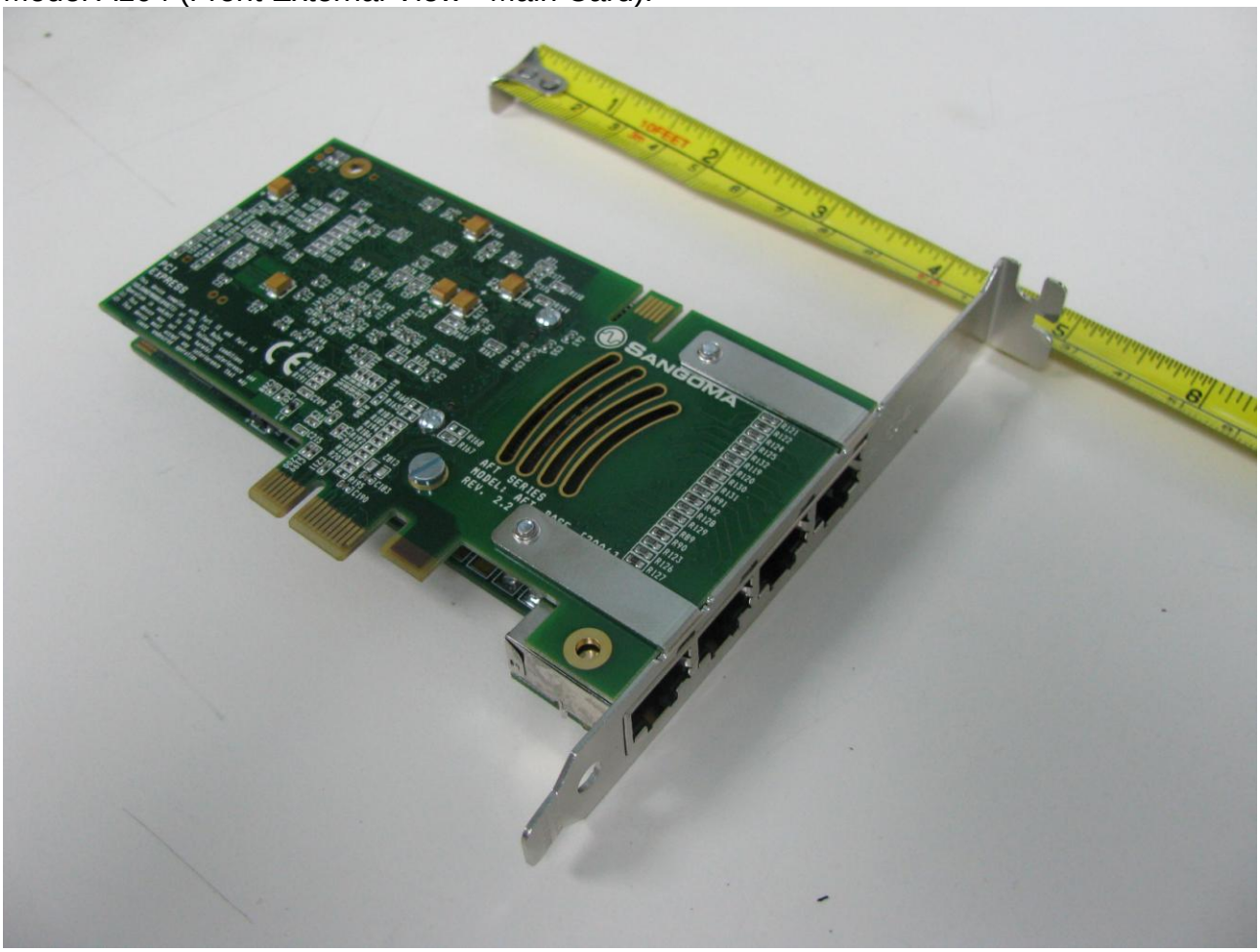
Model A102 (Rear External View - Daughter Card):



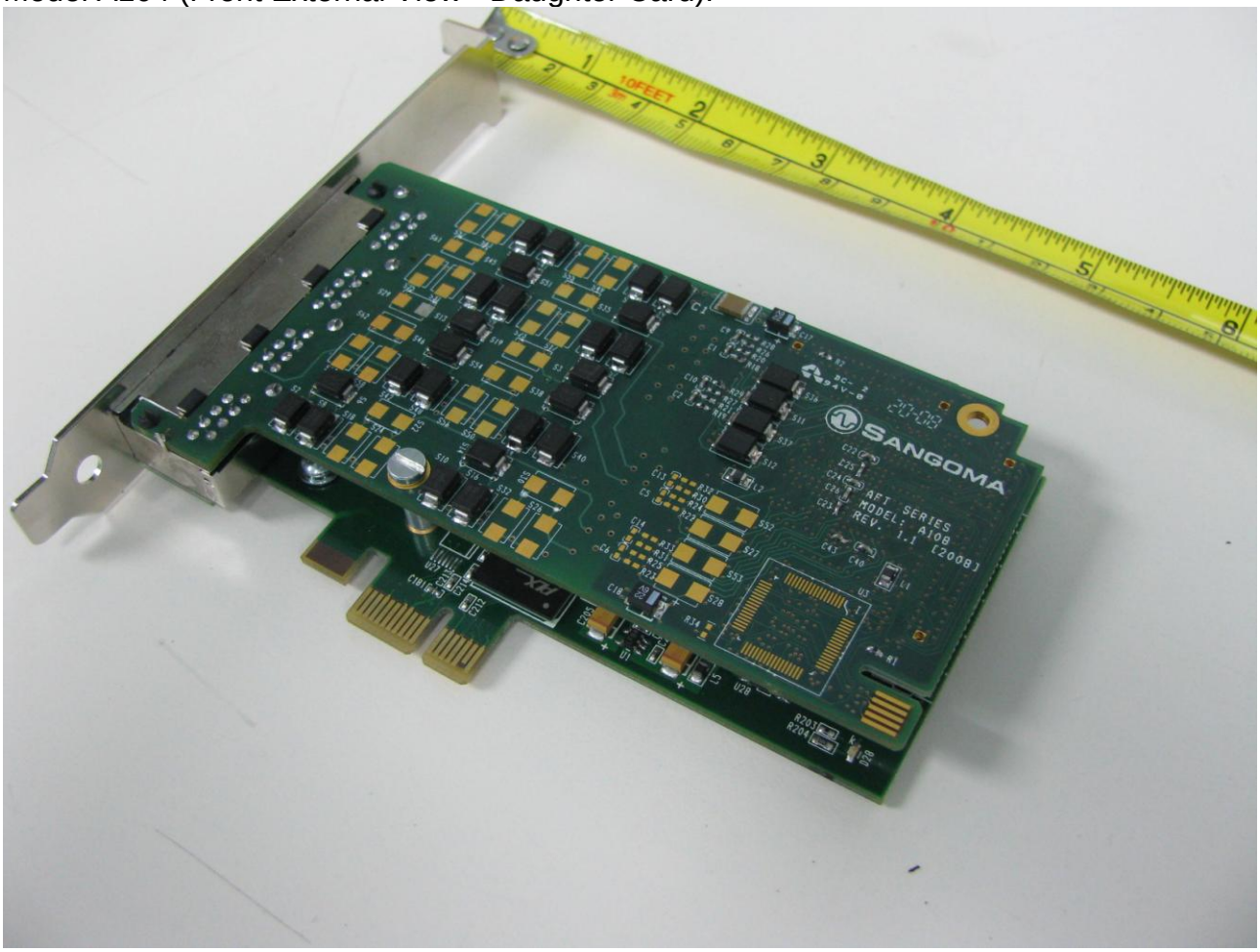
Model A102 (Main Card Top, Daughter Card Bottom):



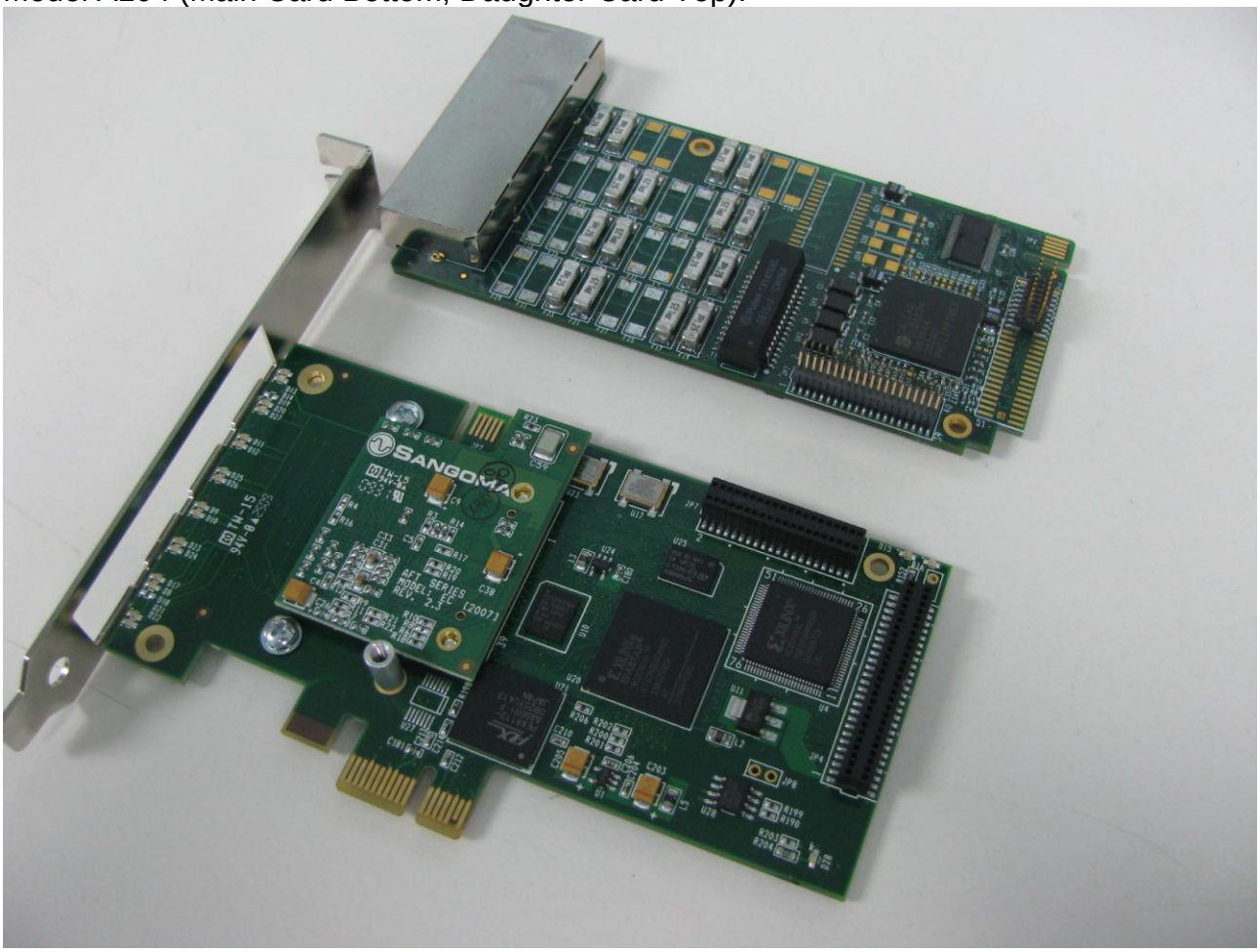
Model A104 (Front External View - Main Card):



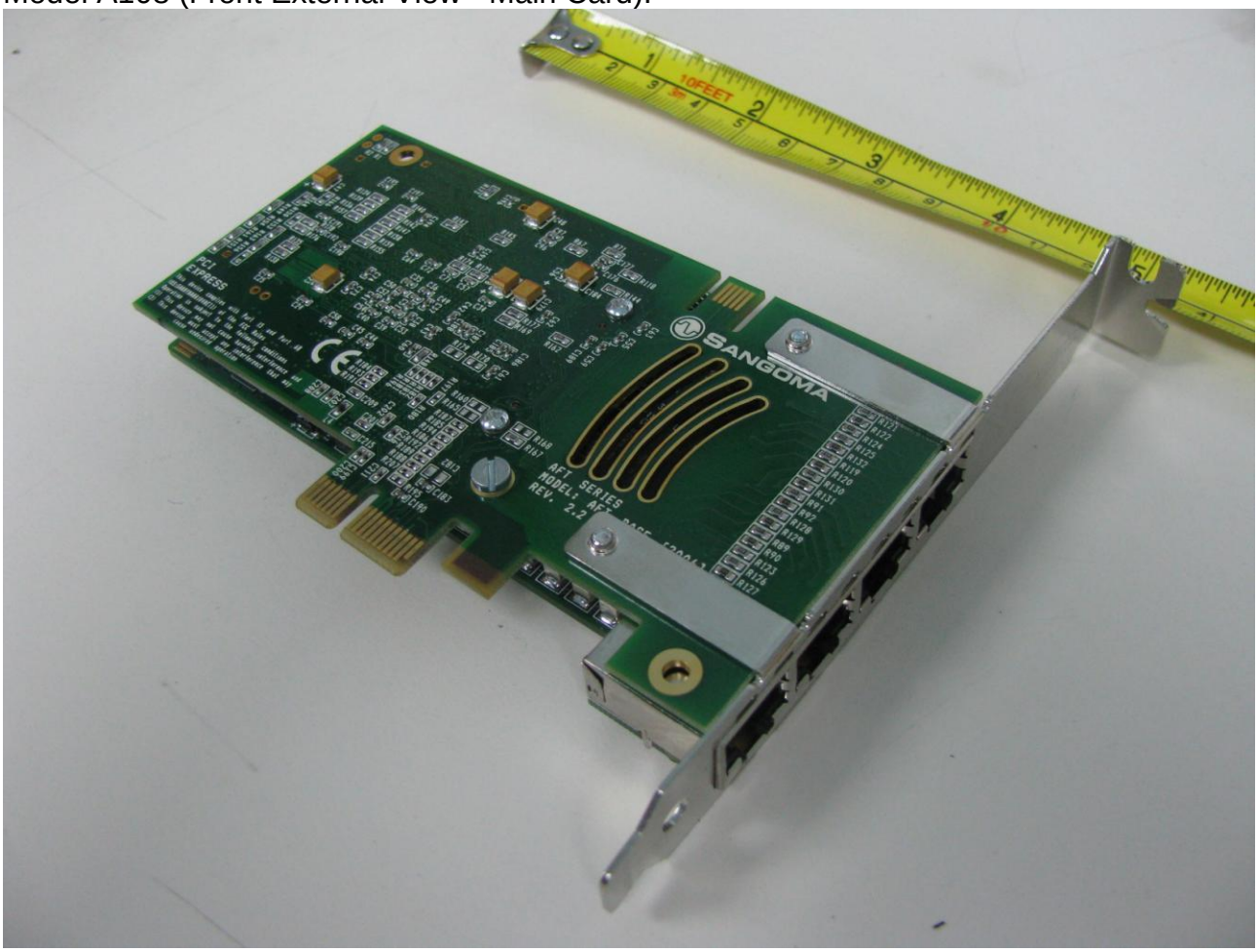
Model A104 (Front External View - Daughter Card):



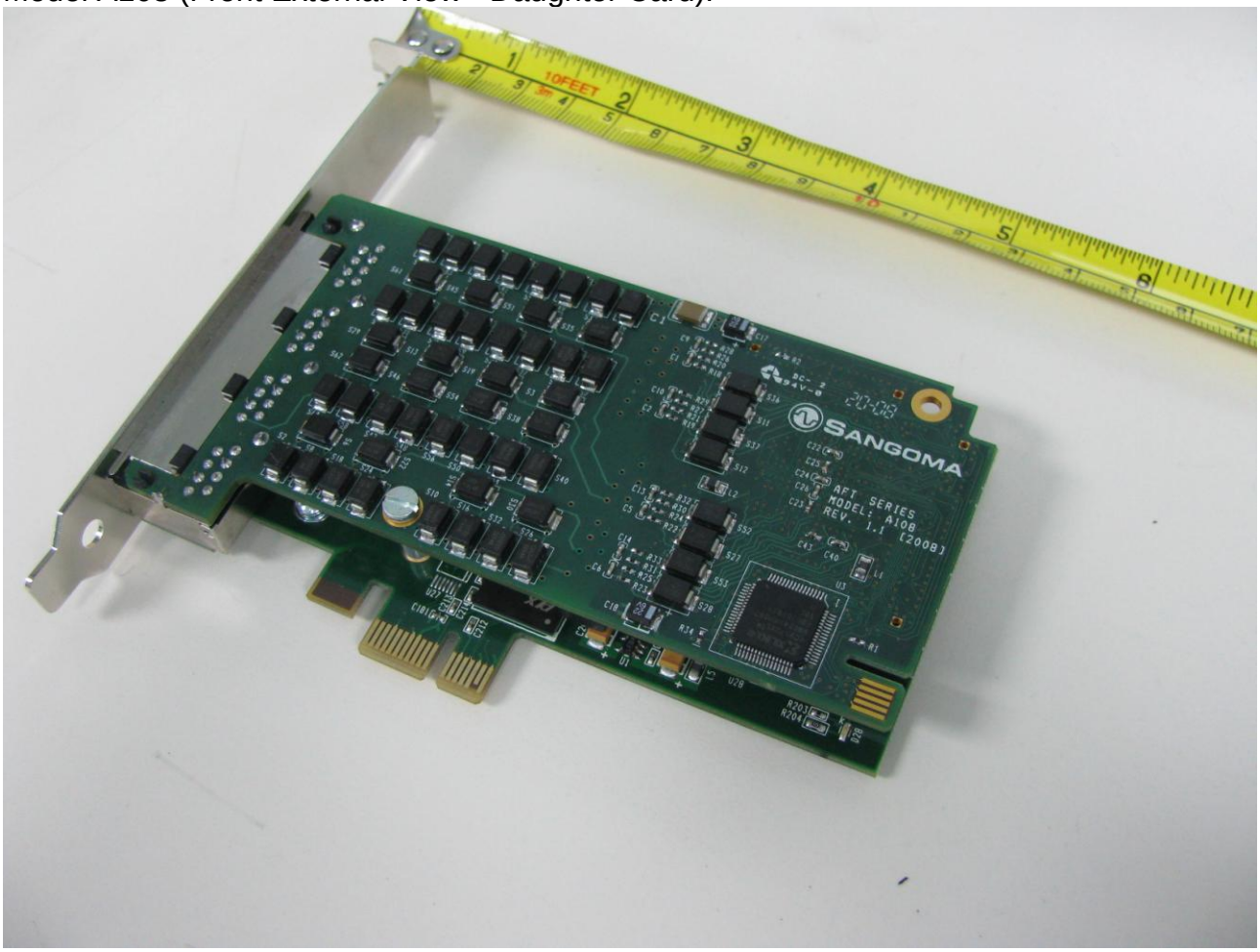
Model A104 (Main Card Bottom, Daughter Card Top):



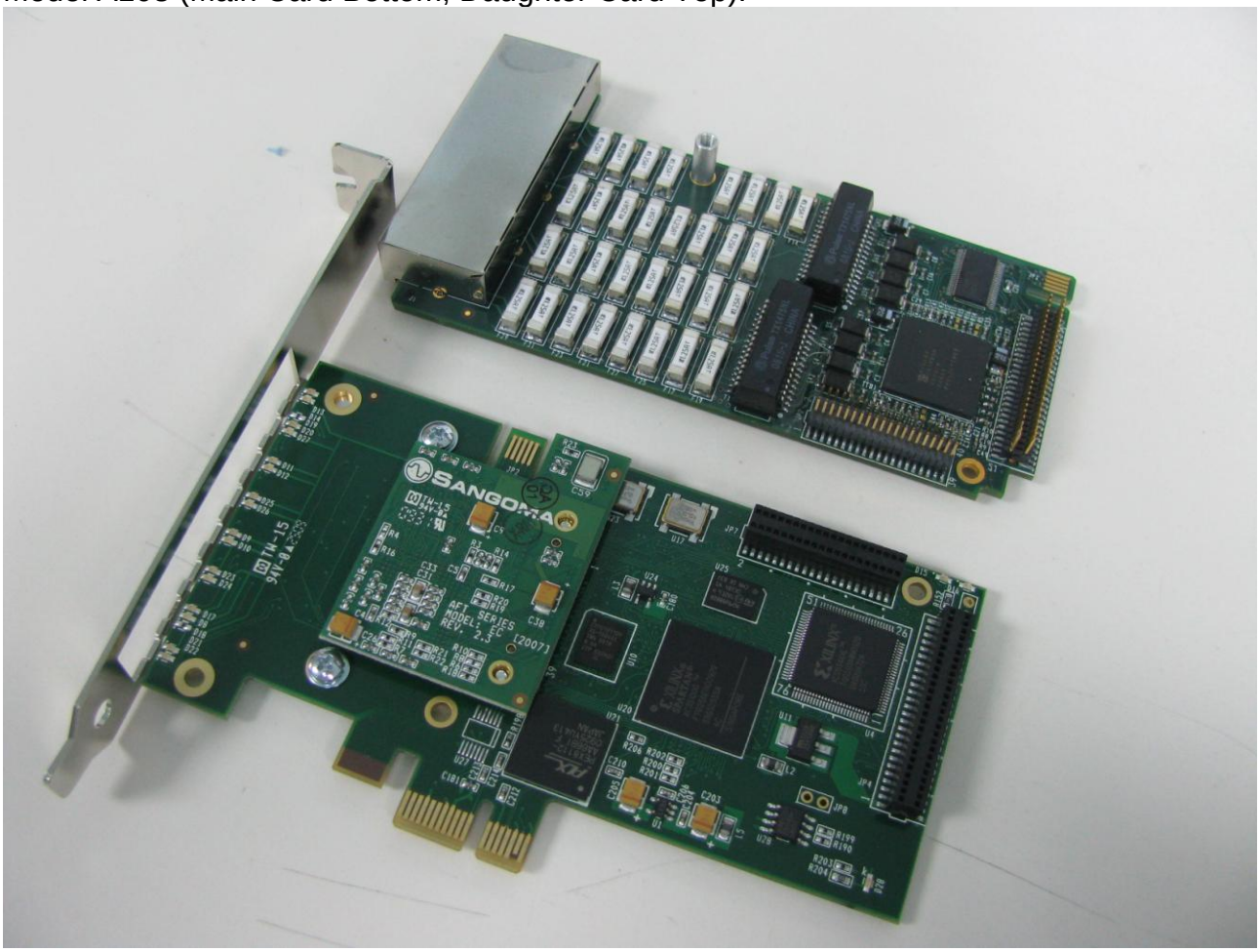
Model A108 (Front External View - Main Card):



Model A108 (Front External View - Daughter Card):

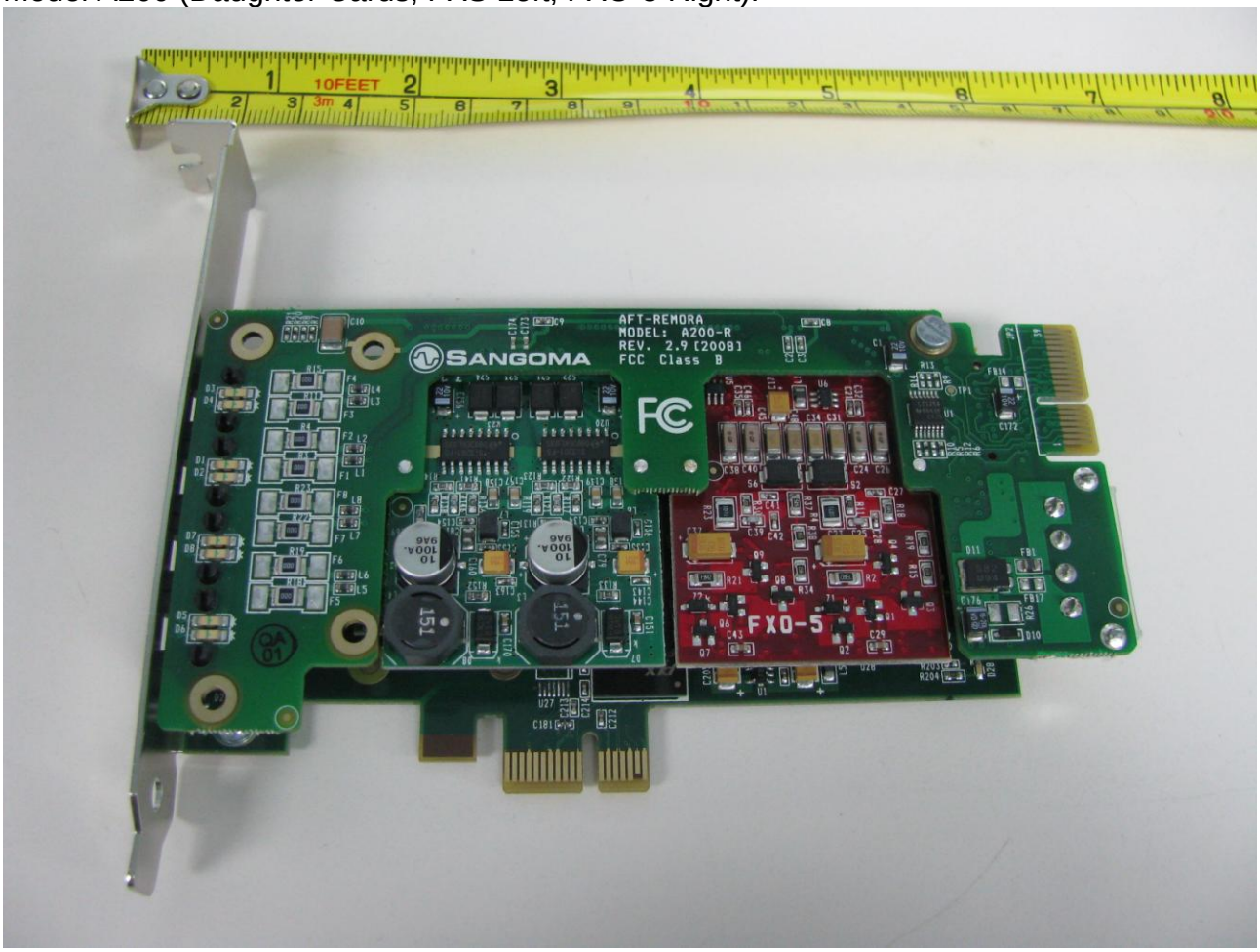


Model A108 (Main Card Bottom, Daughter Card Top):



Model A200 (Front External View - Main Card):

Model A200 (Daughter Cards, FXS Left, FXO-5 Right):



Model A200 (Main Card Top, Daughter Card Bottom):